THE PAPER INDUSTRY and PAPER WORLD

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AN EDUCATIONAL NEWS MAGAZINE — NOVEMBER, 1938

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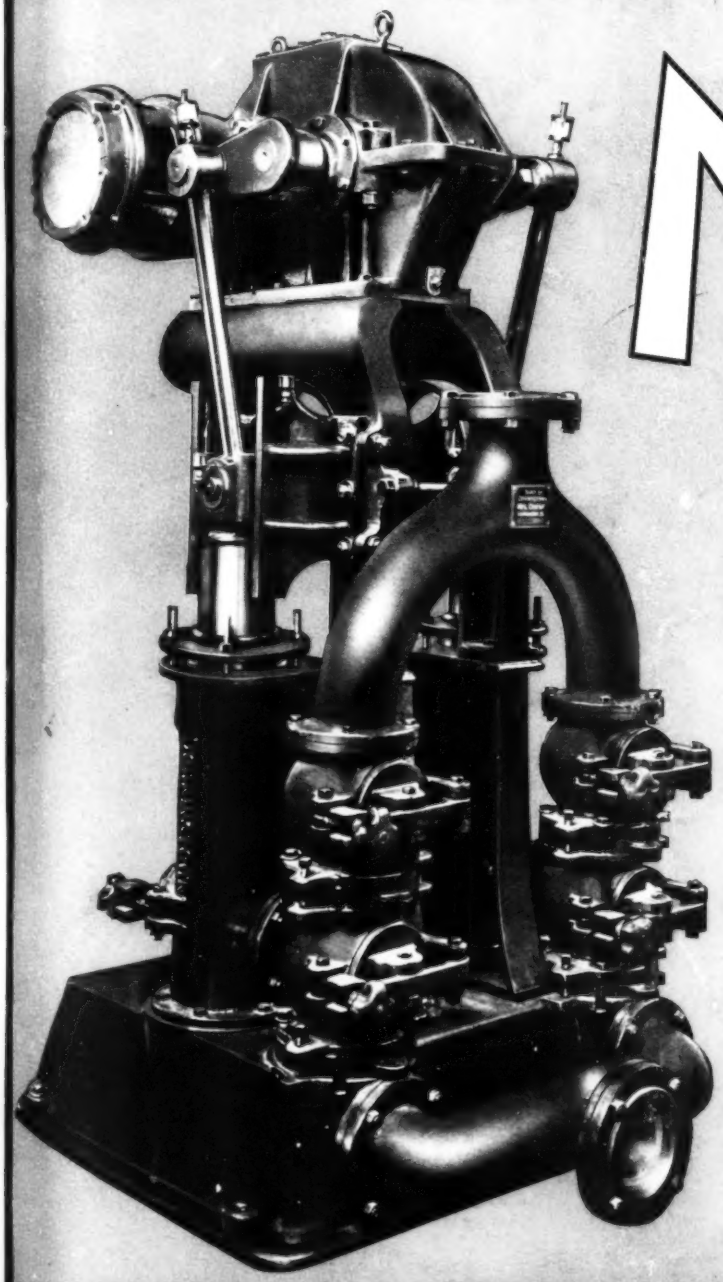


NEW

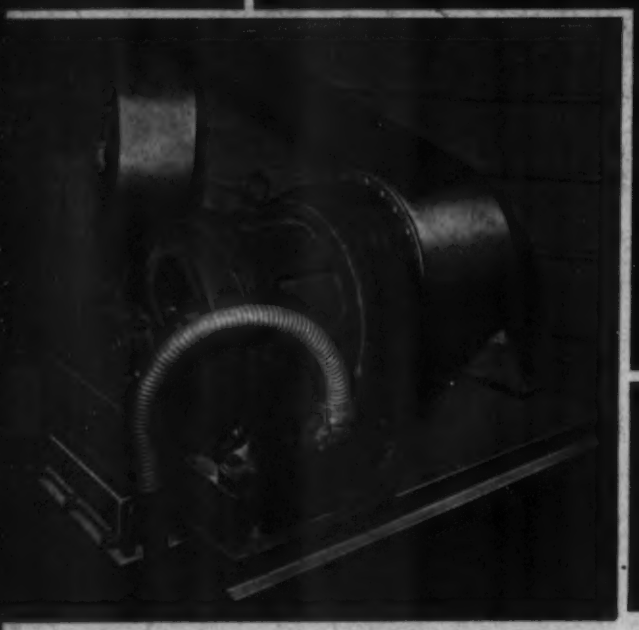
DIRECT DRIVEN STUFF PUMP

Modernized design of the old reliable plunger pump eliminates tight and loose pulleys, belts, exposed gears and saves power, minimizes noise and reduces upkeep costs. Open gears replaced by herringbone speed reducer, running in oil, with built-in motor. Pump can be set up anywhere, for it is a complete, self-contained unit. Cranks mounted on double, extended slow speed shaft. Select a size large enough to do your work at 25 revs. or less and you can feel assured of a trouble-free pump of which you can feel proud. The Downingtown Manufacturing Co., Downingtown, Pa.

BUILDERS OF MACHINERY FOR PAPER AND BOARD MILLS

Typical Rockwood Drive Performan

"FOR THE FIRST TIME A TRULY SATISFACTORY SHORT-CENTER DRIVE"



ROCKWOOD PIVOTED MOTOR DRIVE

BEVERIDGE PAPER COMPANY KNOWS THAT ROCKWOOD DRIVES IMPROVE BEATER PERFORMANCE AND REDUCE DRIVE COSTS

The well known Beveridge Paper Company of Indianapolis have several Rockwood Drives, some of which have been in service for years. The pictures show three Rockwood Drives to beaters—the motors being backgeared with the drive pulley supported by an outboard bearing. This requires a wide Rockwood base but shows how readily Rockwood pivoted motor bases can be adapted to special motors.

First the motor weight is adjusted on the arms to operate at the lowest belt tension that will handle the maximum load without slip. Beater performance is improved, drive maintenance is reduced, the life of the belts is practically doubled, power consumption is sharply lowered. The drive performance is satisfactory in every way—the belt tension increases automatically as the load increases—and falls off as the load decreases. Regardless of changing belt lengths the weight of the motor plus the motor's back kick, or re-action torque, *changes the belt tension to fit the driven load.*

Efficiency of the drive is the highest known. Rockwood pivoted bases are equally successful in improving the performance and increasing the life of V-belts. *There never has been a belt drive for paper mill machines whose performance is so pleasing to paper mill superintendents.*

FREE TRIAL DRIVE OFFER

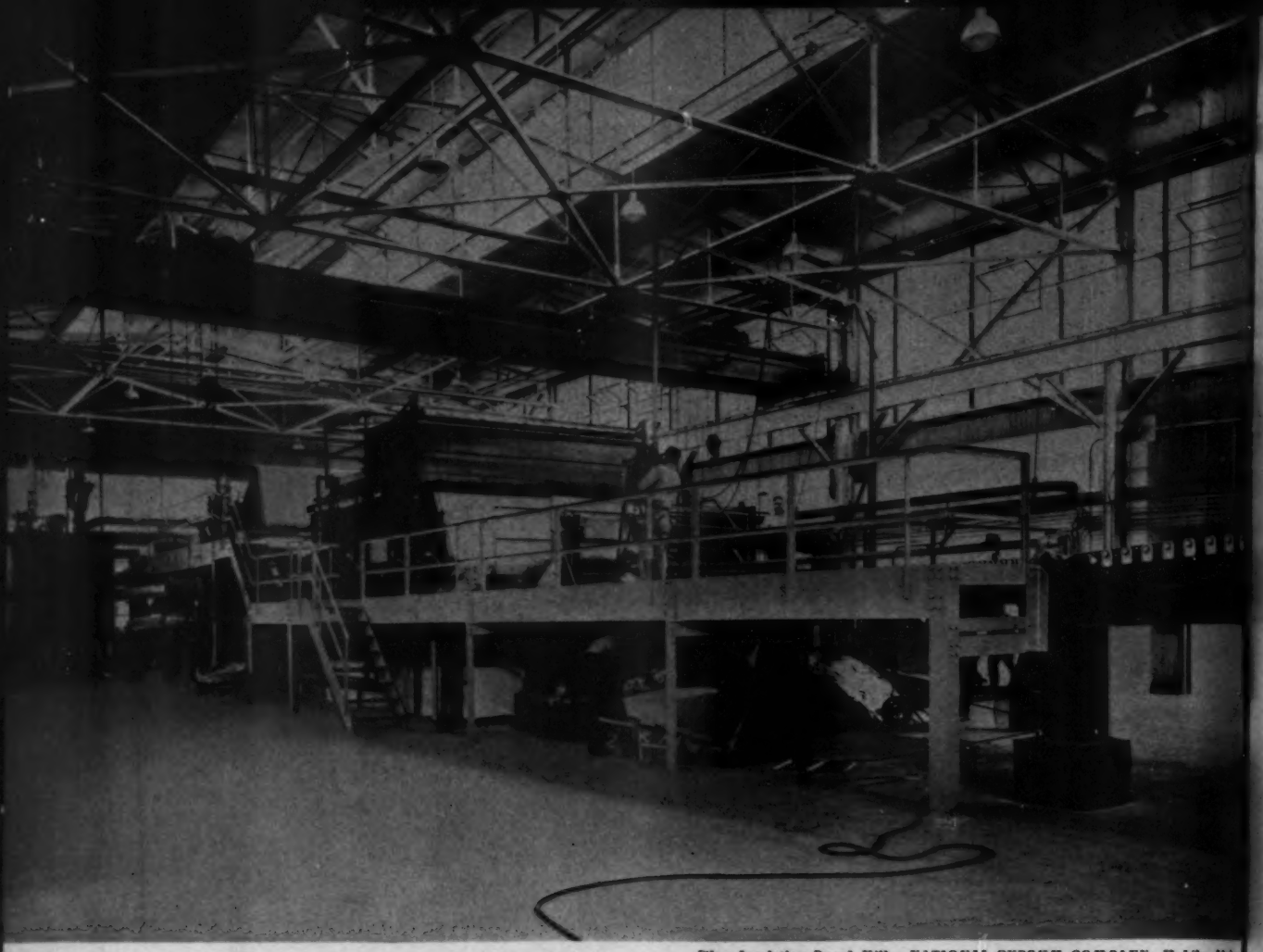
Rockwood engineers will supply any paper mill or paper converter a complete drive to try out—for any reasonable period—AND LET THE USER BE SOLE JUDGE WHETHER IT GIVES SATISFACTORY PERFORMANCE. *Join the many other paper mill superintendents who have found these fine drives a wise purchase and a real money-saving.*

ROCKWOOD MANUFACTURING CO. INDIANAPOLIS

ANOTHER BELOIT MACHINE

THIS FINE PAPER MACHINE IS THE PRODUCT OF THE MODERN ENGINEERING AND MANUFACTURING FACILITIES WHICH MAKE BELOIT THE LEADER IN MEETING THE EXACTING DEMANDS OF THE PAPER INDUSTRY

THE BELOIT WAY BELOIT IRON WORKS PAPER MACH'Y BELOIT WIS. U.S.A. **IS THE MODERN WAY**



Fiber Insulating Board Mill—NATIONAL GYPSUM COMPANY, Mobile, Ala.

WE DO IT ALL

We Design, Build, and Equip Paper and Board Mills complete, with Power Plants, preparing plans and specifications to your requirements and with your approval. We deliver your mill, ready for operation, on time, and at a price you can afford to pay. One bargain covers the whole business. We will gladly submit preliminary sketches and estimates, without cost or obligation to you.

The H.K. Ferguson Co.

ENGINEERS AND BUILDERS

CLEVELAND, OHIO • HANNA BUILDING • PHONE CHERRY 5870 • NEW YORK CITY • 25 WEST 43rd STREET • PHONE BRYANT 9-7257
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It Thinks . . .

Smith & Winchester engineers adapted the photo-electric cell (electric eye) to S & W's improved straight line Paper Bag Tuber. Result: seam variations are held to 1/16″ plus or minus, regardless of unevenly wound or badly dished rolls.

From previously printed rolls the printing variations are held to 1/8″.

And the speed is 600 feet a minute, or more.

Without increasing the number of machines you have in use, or your space, *or* your man power—you can make production leap ahead by replacing present machines with this new development.

Complete data and quotations on S & W Paper Bag Tubers and Bottomers will be sent to you without obligation. Have your secretary drop us a note asking for it.

The SMITH & WINCHESTER *Manufacturing Company*

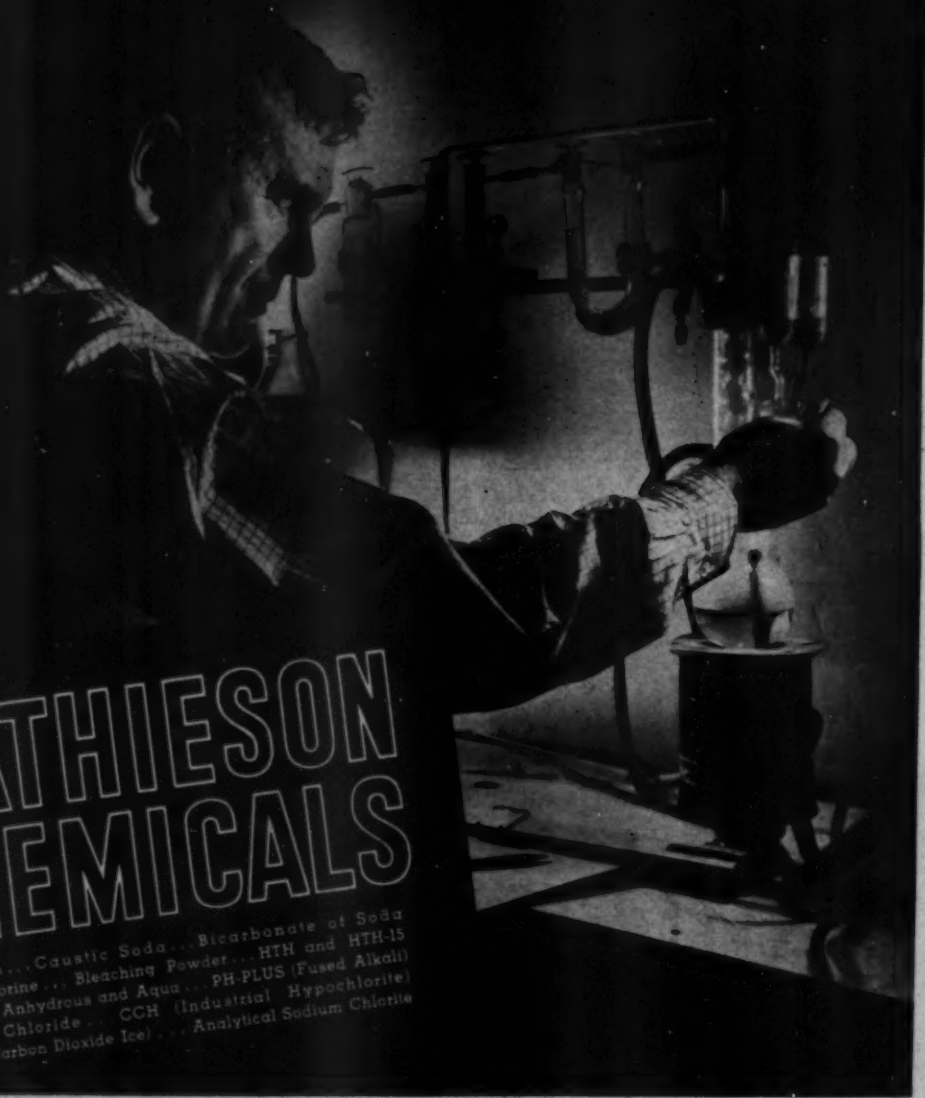
1828

ONE HUNDRED AND TEN YEARS OF ADVANCEMENT

PLANT AND OFFICES AT SOUTH WINDHAM, CONN.

A MAN *in the "Lab"*

No cloisters of forgotten heroes are Mathieson's plant laboratories. Manned by solid citizens like capable "Doug" Shannon, Saltville chemist pictured here, these "labs" have played an important part in Mathieson's past record of achievement. And for the future, men like Shannon are an assurance that Mathieson Chemicals will continue to offer as great or greater value than they do today. The Mathieson Alkali Works (Inc.), 60 East 42nd Street, New York, N. Y.



MATHIESON CHEMICALS

Soda Ash . . . Caustic Soda . . . Bicarbonate of Soda
Liquid Chlorine . . . Bleaching Powder . . . HTH and HTH-15
Ammonia, Anhydrous and Aqua . . . PH-PLUS (Fused Alkali)
Sulphur Chloride . . . CCH (Industrial Hypochlorite)
Dry Ice (Carbon Dioxide Ice) . . . Analytical Sodium Chlorite

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VOLUME 20 NUMBER 8 NOVEMBER, 1938

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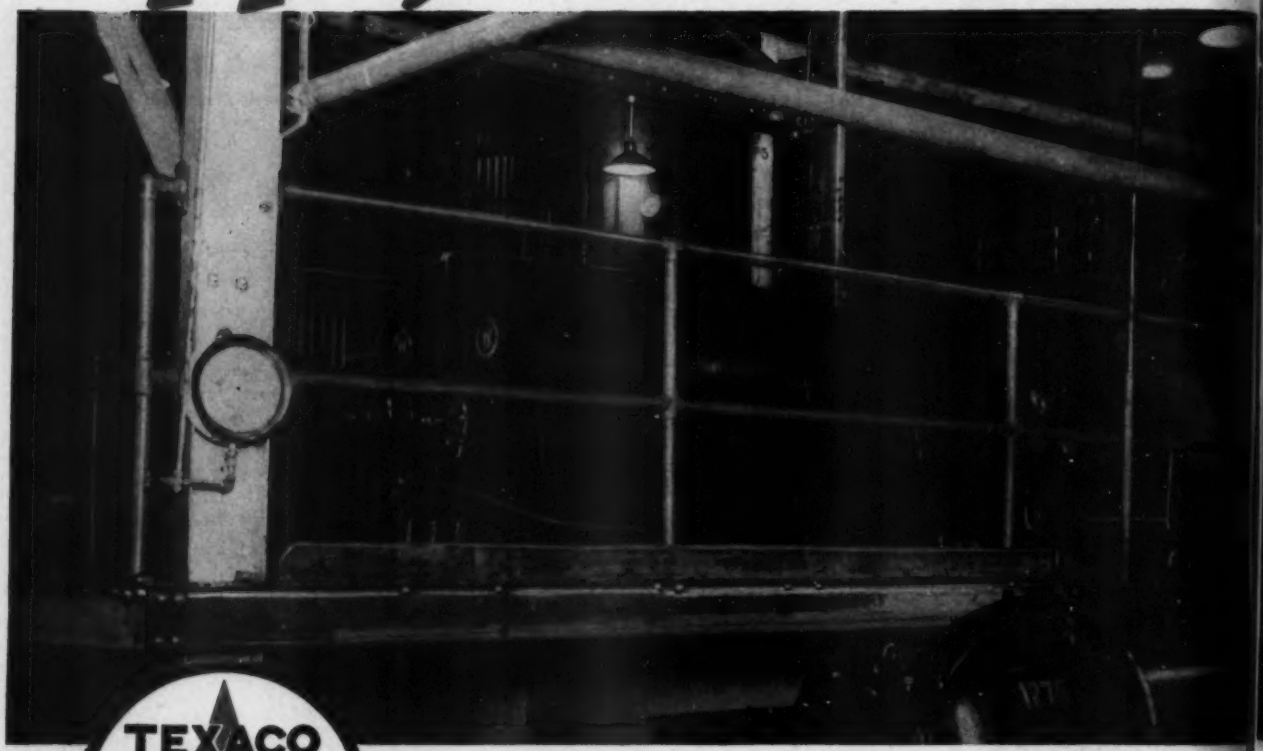


TEXACO

REG. T. M.

Westinghouse Turbo-Generator in power plant of Godchaux Sugars, Inc. This unit generates 1875 K.V.A. at 3600 r.p.m., 600 volts. It operates on 450 lbs. steam pressure exhausting at 140 lbs.

TEXACO

Regal Oils

THIS *WISE CHOICE*

New Westinghouse Turbine gets off to fine start

The Westinghouse Turbine on the opposite page is the latest of three to be installed in the power plant of the big Louisiana sugar refinery . . . Godchaux Sugars, Inc., Reserve, Louisiana.

As the direct result of their 11 years' experience with Texaco, and trouble-free performance in 2 earlier Westinghouse installations, Texaco Regal Oil was also chosen for this latest machine.

If *you* want top performance from *your* turbines, get in touch with Texaco. Trained lubrication engineers are at your service, and 2186 warehouses assure prompt deliveries wherever you are.

The Texas Company, 135 E. 42nd Street, New York City.

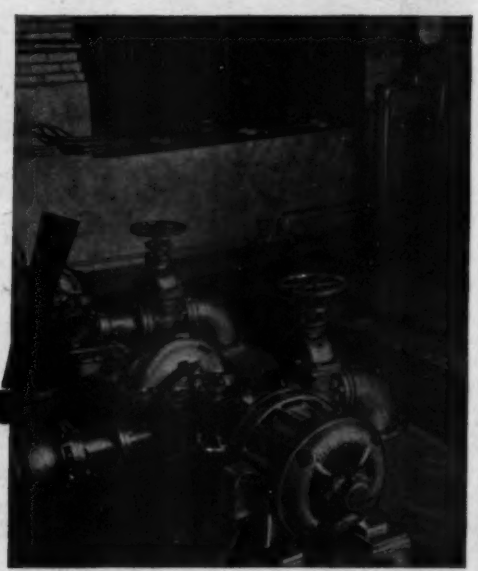
Texaco Dealers invite you to tune in The Texaco Star Theatre—a full hour of all-star entertainment—Every Wednesday Night—Columbia Network—9:30 E.S.T., 8:30 C.S.T., 7:30 M.S.T., 6:30 P.S.T.

FOR TURBINES

General view of sugar refinery and power plant where Texaco Lubricants keep both turbines and reciprocating steam engines at top form.

15% TAX FOR USING OLD PUMPS

Old Pumps Prove Too Costly to Keep in Service . . . Out-Dated by Improved, Highly Efficient, Modern Pumps! Find Out How Allis-Chalmers Pumps Pay for Themselves . . . Give you 15% More Water for Your Money!



CUTTING THE COST OF PUMPING IN HALF are these Allis-Chalmers 400 gpm pumps and motors, in an installation typical of those in hundreds of factories and municipal plants all over the country.

Sure . . . those old pumps still give service . . . but they cost too much to run! New Allis-Chalmers Centrifugal Pumps, with higher speeds, improved designs, and greater efficiencies, will give you as much as 15% more water for your money!

Actually, Allis-Chalmers Pumps will pay for themselves in the savings they give you in pumping costs. Often their first cost is completely covered in less than a year. And you keep on saving year after year . . . keep on getting more for your money!

Pumps That Are Engineered Right!

But that's not all you get when you replace those old pumps with Allis-Chalmers. You get a pump that's engineered *right* . . . for the particular job you want done. And you get the engineering that stands behind every Allis-Chalmers pump . . . the exacting standards . . . the testing and research facilities that have caused Allis-Chalmers equipment to be specified for Boulder Dam, for municipal and for industrial service throughout the world.

Cash in on increased pump efficiency. Find out how you can save money with new pumps. Let an Allis-Chalmers pump man, a trained engineer, analyze your pumping problems . . . show you how much you can save . . . give you actual figures in dollars and cents!

915A

CENTRIFUGAL PUMP DIVISION

ALLIS-CHALMERS

MILWAUKEE · WISCONSIN

SINGLE STAGE DOUBLE SUCTION PUMPS • CLOSE COUPLED SINGLE STAGE SSUnit PUMPS • MULTI-STAGE PUMPS • PAPER STOCK PUMPS • MIXED FLOW AND AXIAL FLOW PUMPS • AND SPECIAL DESIGNS FOR UNUSUAL APPLICATIONS

YES SIR, JUST LOOK HERE—FOUR WAYS TO EARN DIVIDENDS THROUGH LOW CONVERSION COSTS
DIVIDENDS EH—SO SOMEBODY WANTS TO PAY US DIVIDENDS AT LAST

TODAY 25 MILLS use Taylor Pressure Recorders on their Beater Rolls. Actual tests have shown savings up to 12% in beating time—12% increase in production without new equipment. They get power savings too. By actual test a saving of 5½% in power was maintained with proper roll pressure throughout the beating cycle. Taylor Pressure Recorders bring improvements in drying and folding characteristics also. The uniform character of the stock requires less steam consumption in drying, and a 100% increase in folding capacity was discovered in a comparative test.

TAYLOR TEMPERATURE CONTROL helps these grinders achieve maximum production with less power consumption. By actual test, one mill increased the production of its pocket type grinders 2.24% with Taylor Grinder Control. By actual test Taylor Control reduced power consumption 6.1% on pocket type grinders. And by actual test only 30 stone burring operations were necessary on Taylor controlled machines as against 36 such operations on hand controlled machines in an equal period of time. Accurate Taylor Temperature Control Systems can be applied not only to pocket type grinders, but to Semi and Full Magazine types as well.

* * *

THE TAYLOR PRESS-ROLL LOAD RECORDER can cut paper-drying costs, increase press operating efficiency, improve the quality of your product and cut your felt costs. This is because the Taylor Recorder lets you maintain maximum press-roll pressure, *automatically balanced* at both ends of the roll. That means more uniform quality, longer life and greater efficiency for your felt, and consequent lower cost in water removal. Actual records show the cost of water removal at the press is 16¢ per ton as against a cost of $1.68 at the dryers. Use this Taylor system for low conversion cost.

* * *

TAYLOR AUTOMATIC CONTROL system for sulphite digester application is entirely automatic over 90% of the cooking cycle. It maintains the essential low temperature during the penetration period; increases it at the prescribed rate for any character of stock desired; and maintains it at the maximum temperature during the remainder of the cook. The result? A maximum production of No. 1 stock with reduced "tailing" losses. Greater uniformity in strength and bleaching characteristics. Fewer losses due to poorly blown digesters. The Taylor Digester Control System will bring you the highest possible quality—*at a lower conversion cost per ton.*

From the facts described above you can see that each of these Taylor Systems soon pays for itself and begins earning money for your mill. Which systems do you need? Get full data now by calling on a Taylor Representative, or write Taylor Instrument Companies, Rochester, N.Y. Plant also in Toronto, Canada. Manufacturers in Great Britain—Short & Mason, Ltd., London, England.

Taylor

Indicating · Recording · Controlling

TEMPERATURE, PRESSURE, FLOW *and* LEVEL INSTRUMENTS

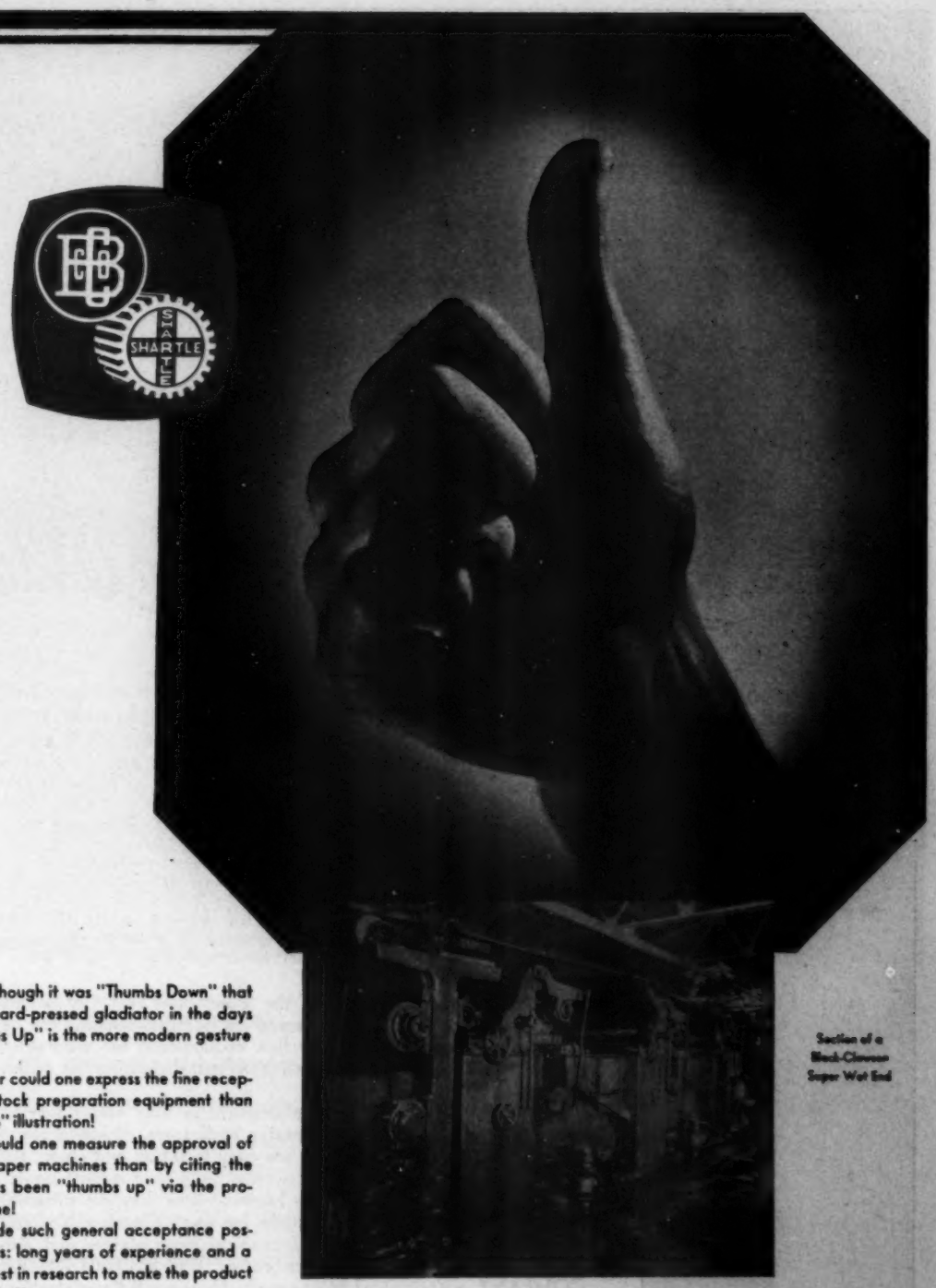
ALWAYS IN THE SPOTLIGHT

The name Powell has always been in the spotlight. Fine workmanship and built-in stamina have made Powell bronze valves the first consideration of the plant engineer.

Our technical department will gladly assist you in your valve problems.

POWELL VALVES

THE WM. POWELL CO. CINCINNATI, OHIO



Section of a Black-Clawson Super Wet End

THUMBS UP! Although it was "Thumbs Down" that spared many a hard-pressed gladiator in the days of Rome, "Thumbs Up" is the more modern gesture of approval.

And how better could one express the fine reception of Shartle stock preparation equipment than with a "thumbs up" illustration!

How better could one measure the approval of Black-Clawson paper machines than by citing the many times it has been "thumbs up" via the proverbial dotted line!

What has made such general acceptance possible? Two factors: long years of experience and a willingness to invest in research to make the product ever better and better.

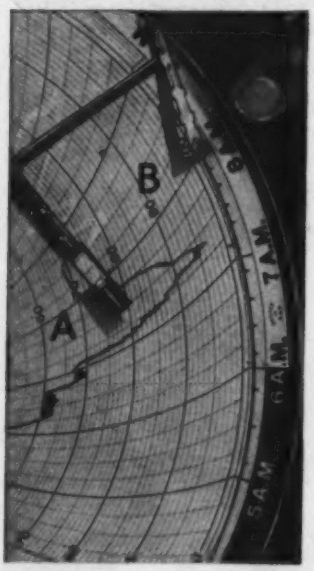
BLACK CLAWSON
and
SHARTLE BROS.

The Black-Clawson Co. and Shartle Brothers Machine Co.

Seeing is believing

Hidden steam Leaks may be running into thousands of dollars in your plant unless the steam you use in each department is separately recorded.

THE dual record on every Brown Flow Meter chart makes it impossible for this important loss to escape detection. Steam waste is detected and recorded automatically. With Brown Flow Meters measuring and controlling the flow of steam for Power, Heating or Processing you are completely protected because:



THE BROWN AUTOMATIC RECORDING PLANIMETER PEN "B": Making the marginal record shown on the chart at left, supplies proof that a definite number of lbs. of steam or gallons of water, cubic feet of gas, or barrels of oil, were delivered, utilized—or wasted.

THE RECORD LINE "A": Shows the rate and records the total amount of steam generated by the boiler. It guides the fireman in maintaining the most efficient boiler operation to meet steam demand.

Another exclusive feature of the Brown Flow Meter is the flexibility of six interchangeable range tubes which permits changing the capacity of the flow meters to meet any flow requirement for differential pressures from 20 to 200 inches of water without disturbing the orifice plate or shutting down the line.

Brown Flow Meters give the ultimate in flow meter service; both electrical and mechanical flow meter bodies are designed for working pressures up to 2500 lbs.—they are easy to install and clean; parts are simple and few.

Learn more about Brown Flow Meters—how they are different—why they are better—what they can do for you. Catalog No. 2005 fully describes Brown Electric and Mechanical Flow Meters and Air-o-Line Flow Controllers. Write for your copy. THE BROWN INSTRUMENT COMPANY, *a division of Minneapolis-Honeywell Regulator Co.,* 4489 Wayne Avenue, Philadelphia, Pa. Offices in all principal cities. Toronto, Canada: 117 Peter Street—Amsterdam-C, Holland: Wijdesteeg 4—London, England: 70 St. Thomas' Street, S.E.I.

BROWN FLOW METERS *and* **MINNEAPOLIS-HONEYWELL** CONTROL SYSTEMS

To Measure and Control is to Economize

Set up a New Low Dryer Felt Cost Equation with WOODBERRY 887 Reinforced Dryer Felts . . .

SAVINGS OF FROM 22% TO 41% REPORTED FROM FIRST FELTS IN USE

*WOODBERRY 887 MAGNIFIED 2½ TIMES

WOODBERRY 887, the new Mt. Vernon-Woodberry Mills patented reinforced dryer felts are making history in the paper industry. New lows in dryer felt costs are being reported every week by those who have adopted them. WOODBERRY 887 is a triplex weave cotton felt reinforced only at intervals on the face by asbestos yarns which give these unusual felts a substantially longer life.

Like all Mt. Vernon-Woodberry Mills dryer felts, WOODBERRY 887's are precision fabrics woven on the finest modern looms to rigid standards of tolerance. They are fast drying with shrinkage and stretch reduced to a minimum.

Specify WOODBERRY 887 and watch your dryer felt costs go down.

MT. VERNON-WOODBERRY MILLS, INC.

TURNER HALSEY COMPANY

40 WORTH STREET *Selling Agents* **NEW YORK CITY**

Branch Offices: SAN FRANCISCO · NEW ORLEANS · CHICAGO · BOSTON · BALTIMORE

Illumination
Promotes
Safety

TRADE WINDS

SOUTHERN KRAFT CORP. TO EXPAND MOBILE PLANT

THE Southern Kraft Corporation will spend $150,000 to $200,000 for expansion of its Mobile (Alabama) mills, R. J. Cullen, president of the International Paper Company, announced in Mobile recently. The expansion will mean an increase in the tonnage capacity of the pulp and paper mills—5,000 more tons of paper a year, Mr. Cullen said.

Employment will not be affected by the tonnage increase, however. At present, over 1,600 persons are at work in the Mobile mills, and more than 1,700 in the woods.

Mr. Cullen decided on the enlargement program after a conference with Major Jack Friend, vice-president and general manager of Southern Kraft. The company's engineers are working on plans and cost estimates, which are not expected to exceed $200,000. After visiting Mobile, Mr. Cullen left for Panama City, Florida, for an inspection of mills there. No expansion is contemplated at any of the other plants of the company, he said.

During a discussion of the paper industry in the South, Mr. Cullen was asked if International contemplates, at any time, building newsprint mills in Dixie. He replied: "We would not, of course, build mills in the South while our plants in Canada are still modern and in good condition, but when they need replacement, that is a different story."

International is "greatly interested" in the Southern newsprint proposal, and "We would like to see a mill built in the South to see how it works," he declared.

RIEGEL CO. TO INSTALL NEW BELOIT YANKEE

The ground has been broken and construction is to begin immediately on a new building, an addition to the Riegel Paper Company plant at Milford, N. J., in which is to be installed a new 132-inch Yankee machine. The building, which will be 230 feet long and 30 feet high, will accommodate two machines although only one is to be installed at present.

The new Yankee machine, manufactured by the Beloit Iron Works, Beloit, Wisconsin, will be used for light weight waxing papers. The Riegel firm now has a total of eleven machines in its Milford mills.

◆

PARSONS PAPER REMODELS ITS PAPER MACHINE

The Parsons Paper Company, Holyoke, Mass., which has been modernizing its various units, recently completed the re-modeling of its largest fourdrinier machine. In this remodeling the machine has been leugthened and speeded up to permit more versatile production possibilities; a complete new foundation was constructed; the whole machine room was made over to accommodate the enlarged machine, and the drive was rebuilt complete with Cleveland worm gear units. Other improvements include a new Emerson jordan, all new copper piping, new stuff pumps, a battery of four centrifugal screens, a large Bird screen, a continuous weight scale, size tub controls, a Verigraph moisture controller, and twice as many dryers equipped with condensate units.

◆

CLIFTON PAPER BOARD INSTALLS NEW EQUIPMENT

The million and a half dollar modernization program at the Clifton Paper Board Company, Clifton, N. J., includes, in addition to the many installations, a new building to house a new board machine recently purchased from the Bagley and Sewall Company, Watertown, N. Y.

The company has installed a new boiler and five new Shartle Brothers Jordans in addition to a complete new Dilts stock preparation system. This latter installation includes a 100-ton continuous breaker beater, Hydrafiners, settling troughs, screens, thickener, 200-ton breaker beater with the latest type brace and a bandless beater roll which is equipped with an automatic junk remover. A Dilts 50-ton beater was also included in the installations.

◆

▶▶▶ THE DURHAM PAPER BOARD COMPANY, Durham, Pa., now has under construction a steel and concrete building 40 feet wide and 145 feet long to replace the drying and finishing rooms of the mill.

STURGEON FALLS SYNDICATE IS NOW DISSOLVED

The syndicate of business men negotiating for the lease of the idle pulp mill of the Abitibi Power and Paper Company at Sturgeon Falls, Ontario, has been dissolved. The $10,000 subscribed by residents of Sturgeon Falls, Ontario, and North Bay has been refunded, according to H. B. Gibbs, chairman of the committee. Mr. Gibbs said that operation of a groundwood mill had passed from the possibility of public ownership to one of a strictly private nature. It is stated that construction of a new 12-ton pulp mill planned by a newly-organized company is well under way.

◆

FIRST EXPORT SHIPMENT OF SOUTHERN BOARD

The first sizable shipment of paperboard made from Southern pine ever to leave from Savannah for a foreign destination left the Southern port October 25 aboard the Norwegian ship, Fagersten, bound for England. The shipment, 1,700 tons of fourdrinier board, was shipped by the Union Bag and Paper Corporation.

"Heretofore," said James H. Allen, executive vice-president and manager of the Union Bag plant, "fifty-three per cent of all the wood fiber used in the United States—paper, pulp and

board—came from trees grown in foreign lands. Now we are beginning to be an exporting country, bringing new money into this country. Ten years ago had someone stated that this country would ever become an exporter of these products, he would have been declared crazy. All of which goes to show the value of utilization of our own resources to the fullest extent."

Smaller shipments have been made out of Savannah prior to this, according to Mr. Allen, but this was the first one of any consequence and is, Mr. Allen believes, the beginning of an exporting business from this country in wood pulp and pulp products.

◆

▶▶▶ THE RIVER VALLEY TISSUE MILLS, INC., Phoenix, N. Y., have taken over the business of the Three Rivers Paper Company, which is being liquidated.

◆

GAIR CONTAINERS BUILDS ADDITION

The Syracuse Containers Division of Robert Gair Company, Inc., located at Syracuse, New York, has under construction additions to its plant which will permit increased business.

The additions include a new spur track about 800 ft. long, a new concrete unloading dock, 15 ft. wide by 168 ft. long and 41 ft. high, equipped with a traveling crane, and a manufacturing building, 24 ft. wide by 168 ft. long, which will connect with the present factory.

The new additions will permit the rearrangement of the equipment now in use, will very considerably increase the capacity of the present plant, and will permit a considerable increase in the working personnel.

It is reportetd that about $45,000 is being spent to increase the plant.

EASTERN PULP

Encouraging progress has been made during October in lining up many northeastern converting mills for their 1939 pulp requirements. Not since early 1937 has there been shown as much willingness on the part of purchasing agents to commit themselves for six months to a year ahead. That Scandinavian producers take a strong view with respect to 1939 prices is not surprising, what with the generally improved outlook for production of paper and the curtailment still in effect in Europe's pulp exporting nations. This is said with particular respect to the sulphites, for while the sulphates are a little steadier, kraft is still held down by the potentialities of Southern production. It is most significant that the decline in American imports of pulp this year show that the drop in kraft to date is some 38 per cent or 39 per cent against 27 to 29 per cent in the unbleached sulphite division.

Importers believe that when they ask $40 to $42 for certain brands of Scandinavian unbleached sulphite for 1939 shipment, their principals are being very reasonable, inasmuch as even resale or nearby shipment has not broken through $37 in any authentic instance of recent date. Nothing will be known regarding bleached sulphite prices for some weeks yet, but it is taken for granted by consumers that the $50 dock minimum basis will be adhered to for the balance of the year, and that any change that may be announced for first quarter will be upwards. Some producers are not sold on the idea of a first quarter advance, while others consider it inevitable on the grounds that costs of many producers exceed the present price. One observer with a record for keen judgment believes that the balance may be thrown on the side of an advance early in 1939 by virtue of the coming minimum prices on bituminous coal which will represent a substantial increase in power costs.

Northeastern converting mills have tried unsuccessfully to break the standard price of $50 delivered on Southern bleached kraft. Foreign pulp of this type is quoted at $55 on the dock for nearby or future shipment.

The threatened freight rate boost by the railroads applying on most Southern pulp moving into official classification territory, may be modified if the consumers are able to convince the railroad men that a $5 per ton boost in freight rates, on a commodity (Southern kraft pulp) now selling at $30-$35 delivered, would simply shift a still larger share of the movement to coastwise vessels.

Certain New England pulp manufacturers have long since anticipated the 44-hour work week of the Wage-Hours Act, by establishing four shifts a day. Incidentally these mills have run six days per week during recent months, for as long as five or six weeks at a time.

◆

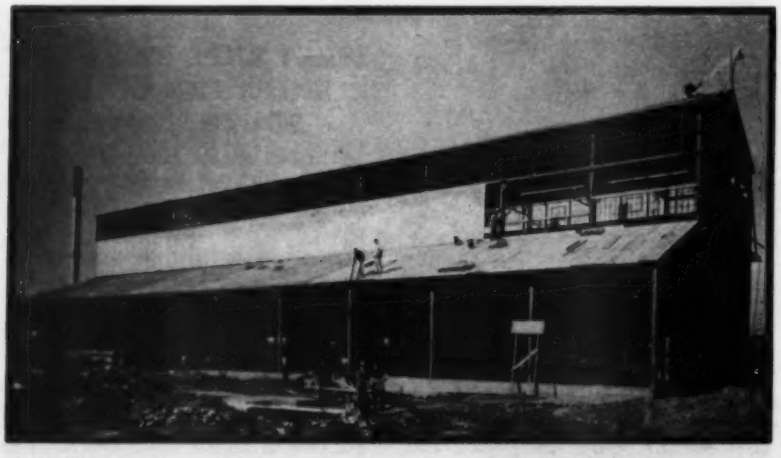
▶▶▶ BROWN COMPANY, Portland, Maine, and Berlin, N. H., have petitioned the Federal Court at Portland for permission to issue $500,000 of trustees certificates to meet tax claims against the company in the states of Maine, New Hampshire and Vermont for 1936-38 inclusive.

◆

AUSTRALIA TO PLACE BOUNTY ON NEWSPRINT

Of considerable interest to the Canadian newsprint industry is the recent announcement from Canberra that the Australian Government has decided to aid the establishment of a newspaper industry by a company formed of newspaper publishers known as the Australian News Print Mills, Ltd. The company, with a capital of more than £1,000,000, will grant a bounty with a maximum of £4 per ton when imported newsprint costs £12, the bounty disappearing when the cost reaches £18, 11s., 3d.

The bounty, payable on the basis of 1939 price, (£16, 6s.) is £1, 14s. The Tariff Board recommended that the bounty should be provided from the additional duty, varying with the imported cost of Canadian newsprint, but the Minister of Customs, T. W. White, announced that the additional duty would not be imposed unless the price fell below £15, at which time the duty would be 5s., rising to 7s., 6d. when the price falls below £14

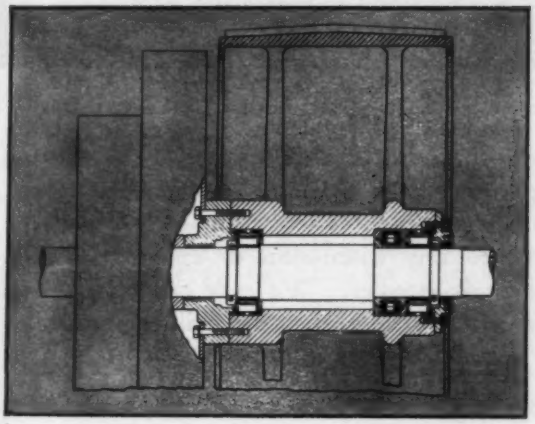


New addition to Syracuse Containers Division, Robert Gair Company, Inc., Syracuse, N. Y.

BRINELL EFFECT
EXCESSIVE NOISE
EXCESSIVE WEAR

All Banished when this LOOSE PULLEY was equipped with

Rollway *Roller* Bearings



"Engineered to the Job"

The Rollway Bearings detailed here were engineered for the following conditions: A taut 24″ heavy triple leather belt running in a vertical position. A double arm, 52″ x 25″ cast iron pulley with return flanges, turning at 355 RPM on a 5⅜″ diameter shaft. A total radial load—including horsepower pull or torque, initial belt tension and weight of pulley—of 10,000 pounds. Plus a strong end-thrust load from a magnetic clutch.

The LOOSE PULLEY shown here—used to drive the dryer section of a 157″ paper machine—engages the shaft through a magnetic clutch. Under a 10,000 lb., total radial load, it turns for long periods *as a unit with the shaft.*

Before ROLLWAY ROLLER BEARINGS were installed, this constant load caused indentations to form in the races of the former anti-friction bearings. There was severe chatter and vibration when the clutch was disengaged and the rollers bumped across the grooves and ridges. These corrugations in the races even caused the outer race to turn, resulting in wear on the pulley hub.

But ROLLWAY solid cylindrical ROLLER BEARINGS have ended all the trouble. Line contact—plus parallel contact between the shaft and the rollers—have eliminated the denting, or Brinell effect. Furthermore, by separating the load into its two components of thrust and radial, the ROLLWAY BEARINGS are better able to cope with the strong end-thrust of the magnetic clutch.

Types for every PAPER MILL NEED

Rollway's free Advisory Engineering Service will gladly assist you in selecting the highest efficiency Rollway Bearing for:

- ★ Dryer Cylinders
- ★ Jordans—all makes, front, back and outboard bearings
- ★ Felt and Wire Carry Rolls
- ★ Breast Rolls
- ★ Suction Press Rolls
- ★ Cylinder Molds
- ★ Couch Rolls
- ★ Primary Presses
- ★ Main Press Rolls
- ★ Pulp Grinders
- ★ Chippers
- ★ Deckers
- ★ Slitters
- ★ Reels
- ★ Loose Pulleys
- ★ Calendar Stacks—bottom, top and intermediate rolls

ROLLWAY BEARING COMPANY, INC.
SYRACUSE, N. Y.

ROLLWAY
31 Years Building Heavy-Duty Bearings

BEARINGS

CALENDER SPEEDS ARE *Stepping Up* LIKE THIS

750 f.p.m.

1480 f.p.m.

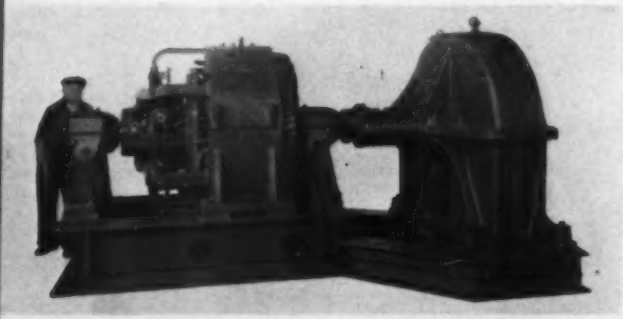
2000 f.p.m.

In 1923 this was "tops" *In 1931, this . . .* *Now . . .*

THE supercalender at the left was speeded up from 500 to 750 f.p.m. by the application of a direct motor-drive in 1923. When the mill men saw how smoothly the Reliance Drive operated, they said, "Why not 1000 f.p.m.?"—and so it went until today a supercalender with a 200 hp. Reliance Drive is going smoothly at 2000 f.p.m. . . . With such experience back of them, you can be sure that Reliance Engineers will bring helpful suggestions to any discussion of calender drives. Let's talk it over. We take our chances on stirring up something that will be profitable to both.

RELIANCE ELECTRIC & ENGINEERING CO., 1088 IVANHOE ROAD, CLEVELAND, OHIO

Sales Representatives in Principal Cities



400 hp. Main driving motor with speed reducer, forming part of a Reliance Supercalender Drive for the widest supercalender ever built.

Why calendering can be done faster and better with Reliance Supercalender Drives. There's a steady, slow speed for easy handling of the sheet when threading . . . The drive provides smooth, automatically controlled acceleration to any desired point . . . With 120 or more operating speeds it's always possible to calender at the highest rate consistent with good finish . . . Push-button control makes it easy to slow down for "flags" and to return to production speed quickly and smoothly . . . Quick stopping in case of paper breaks saves "broke."

Reliance Synchronized Drives for Supercalenders and Winders can be supplied for both a-c. and d-c. circuits

RELIANCE A-C D-C MOTORS

and 10s. when the price falls below £13.

The bounty is to continue for three years from the commencement of production, after which the tariff board will investigate the need for its continuance. Legislation authorizing the bounty will be introduced shortly. The Tariff Board reported that the company had promised that as long as it received bounty it would sell to newspapers outside the company at the same price as to the shareholders.

◆

▸▸▸ THE PORT ROYAL PULP AND PAPER COMPANY of St. John, N. B., which has a daily capacity of 125 tons for bleached sulphite, has resumed operations, though not on a capacity basis. The mill had been closed down for five months as a result of the war in the Far East where the company had large outlets for rayon pulp.

◆

COLLINS MFG. CO. PLANT DAMAGED

Damage to the extent of $250,000 was suffered by the Collins Manufacturing Company, North Wilbraham, Mass., as a result of the recent September flood and the change of course of the Chicopee River. The dam just above the plant was stronger than the dirt dikes on the sides of the river and consequently the flood waters burst through one side of the dike and flooded the first floor of the Eastern firm.

The plant has been closed several weeks and the company has filed the application form for a loan from the Disaster Loan Corporation to help in reconstruction. The machine shop, box shop and plater shop suffered the most severe damage.

◆

FLOOD CONTROL FOR NEW ENGLAND

Paper manufacturers in Holyoke, Mass., welcomed news that $8,000,000 had been allotted to New England for flood control. Victims of yearly floods, the mills in Holyoke will be protected by a $1,975,000 sea wall that will extend along the Connecticut River from a point near the Holyoke dam to Mosher Street in Holyoke.

Work on the wall will be started in the near future under the direction of United States Army Engineers. Preliminary work includes the signing of easements by manufacturers in cases where land is needed. There has been agitation for a sea wall in recent years, particularly since 1936, when Holyoke's paper mills were damaged to the extent of millions of dollars by an all-time record flood. In 1927 mills were again forced to close because of high water, and in September of this year a combination of flood and hurricane did damage to the extent of thousands of dollars (cf. THE PAPER INDUSTRY AND PAPER WORLD, p. 725, Oct. 1938).

The first portion of the dike must be constructed by June 30, 1939. After this section is built, plans will be started for further extensions of the sea wall to a point near the Springdale section. After all of the wall has been completed, Holyoke's mills will have little chance of a repetition of the past.

◆

▸▸▸ PROSPECTS FOR REORGANIZATION of the Lake Sulphite Company at Red Rock, Ontario, have improved according to reports from various quarters. It is possible some definite announcement may be made at an earlier date. According to proposals in hand, the plant would be finished so as to be able to turn out both rayon grade sulphite and bleached sulphite for fine papers.

◆

EASTERN MFG. CO. FILES NEW PLAN

A second proposed plan of reorganization for the Eastern Manufacturing Company, South Brewer, Maine, has been filed in the Federal District Court at Bangor. The new plan proposes 100 per cent cash for merchandise creditors; bank loans to be replaced with 5-year loans carrying 4 per cent interest; Orono Pulp & Paper Company 5 per cent bonds to be paid in full with deferred interest also in cash; Eastern 7 per cent bonds to receive new 15-year mortgage bonds at 5 per cent on a basis of par for par; deferred interest on the 7 per cent issue to be paid in 16 shares of new 5 per cent prior preferred of $20 par, convertible into 2 shares of new common, par $10 and $30 in cash. New bonds would be convertible into 100 shares of new common. Orono 6 per cent bonds would receive par value in new bonds and 12½ shares of prior preferred plus $10 in cash. Preferred stock would receive four shares of new common and the present common 4/10 share of new common.

The first plan offered less than two months ago, was devised by stockholders and met with considerable opposition from bondholders. The new plan is the work of a group representing 6 per cent bondholders of the Orono Pulp and Paper Company, a subsidiary of the Eastern Manufacturing Company.

FINANCIAL

THE Czechoslovakia peace settlement and the return of business confidence which had been interrupted by threatening conditions abroad was marked by an increase in paper mill securities, and considerable impetus was given the advance by improving reports of operations provided by various companies, some of which follow:

Union Bag & Paper Co.—Profits for the year ending Sept. 30 were $1,109,974, only $250,000 under the return for the previous year, which included the high priced period of early 1937. Third quarter earnings were approximately the same as for the same period of 1937, despite a 25 per cent lower price for paper bags.

Johns-Manville Corp.—Net earnings for the three months ending Sept. 30 were $882,366, equivalent to 89 cents per common share, as compared with $1,780,857 for the same quarter of the previous year, covering an actual loss during the first six months.

National Gypsum Co.—This company, like the others in the building paper and wallboard field, shows the effects of the prospective increase in building operations. Earnings were $751,008 for the nine months ending Sept. 30, practically equal to the same period of 1937, this being equivalent to 41 cents per common share. Of this figure, more than half was accumulated during the last quarter.

Hinde & Dauch Paper Co.—Profit of $159,457 is reported for the quarter ending Sept. 30, materially a higher figure than for the June quarter, when earnings were $136,036.

Kimberly-Clark Corp.—Net profit for the quarter ending Sept. 30 was $150,645, $275,215 for the previous quarter.

Paraffine Companies—Net profit for the September quarter was $336,403, compared with $238,811 for the previous quarter and $641,569 for the September quarter of 1937.

Oxford Paper Co.—Net income for the nine months ending Sept. 30 was $71,226, compared with $891,292 for the same period of last year.

Flintkote Co.—Quarter ending Oct. 8 showed net income of $436,986, as against $432,757 for the corresponding quarter of 1937. The manner in which the last quarter showed an improvement over the balance of the year is shown by the earnings of $706,613 for the entire forty weeks of the year to Oct. 8.

Crystal Tissue Co.—Nine months ending Sept. 30 showed a loss of $11,-

229, compared with a profit of $113,332 for the same period of 1937.

Container Corp.—Net earnings for the quarter ending Sept. 30 were $16,144 as compared with losses of $53,198 and $67,053 for the first and second quarters.

Strathmore Paper Co.—The regular dividend has been voted on the preferred stock for the quarter ending Sept. 30, following a period in which unpaid dividend accumulations had reached a total of $20 per share.

American Writing Paper Corp.—Net loss for the quarter ending Sept. 30 was $46,031, while the loss for the first nine months was $127,116.

New York Stock Exchange—Stocks

	1938 Closing Sale Oct. 31	Closing Sale Sept. 30
Celotex	22¼	29
Same Preferred	69	68
Certain-teed Products	11⅜	9¾
Same Preferred	44	39
Champion P. & F. Co.	29	24
Same Preferred	99	95
Container Corp.	16⅓	14⅞
Cont-Diamond	10¾	9¼
Crown Zellerbach	13⅞	13
Same Preferred	87½	80
Dixie Vortex	*11¼–12	9½
Same "A"	*30–30¾	31½
Robert Gair	4½	4
Same Preferred	14½	*11¾–16½
Kimberly Clark	27	*24–25½
MacAndrews & Forbes	*28⅞–29½	29
Masonite	57	53¾
Mead Corp.	13¾	12¼
Same Preferred	*90–90⅛	65
Paraffine Co.	57	47½
Same Preferred	*99¾–102	99½
Rayonnier	17	13⅞
Same Preferred	24	20
Scott Paper	49½	49½
Union Bag & Paper	13⅞	12⅜
United Paperboard	7¾	6¾
U. S. Gypsum	108	100
Same Preferred	171⅛–171¼	*150–167

New York Stock Exchange—Bonds

Celotex 4½%	92½	81¼
Certain-teed	82	78½
Champion P. & F.	100	98⅞
Container Corp. 5%	99½	——
Inter. P. & P. 6%	89⅞	85
Same 5%	97	89⅜
Mead Corp.	104	103½

New York Curb Exchange—Stocks

Am. Boxboard	*11½–12	*9–10
Brown Co., Pfd.	*23½–24½	24
Det. Paper Prod.	* 2½–2⅝	*2½–2¾
Great Northern Pap.	*34⅛–36	*29½–31
Hummel Ross	4⅜	*3¾–4¼
National Container	7¼	——
St. Regis	4	3¼
Taggart	* 5¾–6	4¾
United Wall Paper	3	2¼

*Closing Bid and Asked Prices.

GREAT LAKES SHARES LISTED

Additional shares of the Great Lakes Paper Company, Ltd., Port Arthur, Ontario, were recently listed at the Toronto Stock Exchange and called for trading. The listing covers 10,000 no par value Class "A" preferred shares and 20,000 no par common, which brings the total listed capital to 100,000 Class "A" preferred and 99,991 common. The newly listed stock is that which was recently delivered to the liquidator for distribution, according to the approved arrangements made under the Companies Creditors Arrangement Act.

◆

BOWATER-LLOYD HAS AGREEMENT WITH GOVERNMENT

On October 1, 1938, a Government Commission announcement issued at St. John's, Newfoundland, stated, that an agreement had been reached between the Government and Bowater-Lloyd (Newfoundland) Ltd., after negotiations for timber and tariff concessions. The terms of the agreement were not disclosed pending submission for approval by the Dominions office.

The British newsprint company, which recently acquired International Power and Paper Company's Corner-brook plant had been negotiating with the Government for several months over construction of a $6,000,000 sulphite mill in a heavily-wooded section of Newfoundland. The company would build the mill in return for timber and tariff concessions.

Later the company made alternative proposals. The second proposal would have increased the capacity of the Corner-brook mill by 226 tons daily, this being the capacity of the projected mill. Under this proposition an agreement would be entered into with Bowater-Lloyd (England) Ltd., to cut for export a minimum of 50,000 cords of pulpwood for a period of years. Establishment of facilities for increased pulp production would be in exchange for rights to cut wood for export.

◆

KEITH MAY SELL MAJORITY STOCK

Stockholders of the Keith Paper Company, Turners Falls, Mass., met on November 1 to consider an offer of the New York city interests to buy either all of the company's stock or at least 51 per cent of it. The names of the prospective purchasers were not disclosed, nor was the price offered for the stock. Culmination of the deal hinges on the New York interests purchasing at least 51 per cent of the stock if they are to continue operation of the mill.

The first meeting was adjourned until November 10. At that date it was to have been decided whether the company will accept the New York plan or a previous plan. This latter plan includes loans from the RFC, various banks and a power company.

◆

▶▶▶ BUSINESS IS ON THE UPGRADE at the American Writing Paper Corporation, Holyoke, Mass., according to President Leon M. Yoerg who stated that fourteen machines are in operation and that 1,300 persons are employed. This is somewhat in excess of recent months. The slight rush is largely due to orders piling up after the September flood and hurricane.

◆

HERON BAY UNITS NEAR COMPLETION

At Heron Bay, some 62 miles east of Schrieber, Ontario, the Ontario Paper Company is completing the erection of a barking drum and wood shipping plant. Work was started in June and construction is expected to be finished in November. Machinery and equipment is due to arrive in January and to be installed in February.

A three and one half mile flume will carry the barked wood to the loading dock on the shore of Lake Superior. To supply the electrical power for the whole project, a modern power plant is being erected. Energy will be obtained from the Black River. A wharf is also being built.

◆

QUEBEC N. S. PAPER ELECTS OFFICERS

Officers of the Quebec North Shore Paper Company, wholly-owned subsidiary of the Ontario Paper Co., Ltd., which was recently incorporated in Quebec, are A. A. Schmon, president; S. M. Patterson, first vice-president, and Col. R. R. McCormick, second vice-president and treasurer. Mr. Schmon is also president of the Ontario Paper Company, the parent organization. Mr. Patterson is publisher of *The Daily News* and Mr. McCormick is publisher of *The Chicago Tribune*.

The entire productiton of the recently completed Baie Comeau mill of the new organization is to supply *The Daily News* which, together with *The Chicago Tribune*, owns the Ontario Paper Company and its subsidiaries.

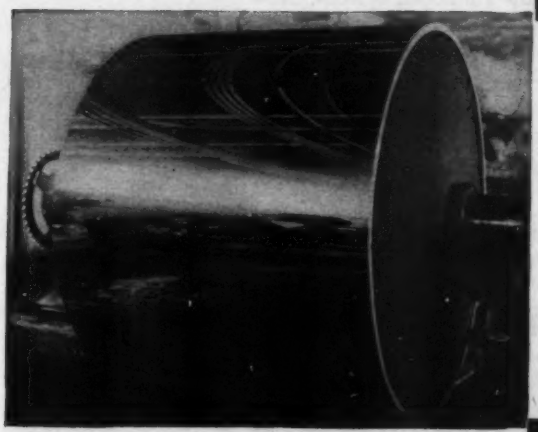
Bigger *and* Better

•

The largest single piece ever to be chromium-plated

•

Fifteen-ton welded steel drum, 12′ diameter x 6′ face, CRODON-plated at the Waterbury plant of Chromium Corporation of America.



Typical high-lustre finish of CRODON-plated 12,000-pound welded steel drum, 6 feet in diameter by 5-foot face.

***CRODON** plating provides, protects and preserves these flawless mirror surfaces and establishes a new high in perfection of finished product.*

CRODON
The Chrome Plate

CRODON PLATING *pays*

CRODON leads in the field of industrial chromium plating... improving constantly through research and practical experience . . . steadily growing in favor.

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CONTROL THE DUST!

It controls your profits

INDUSTRIAL dusts constitute a complex problem of primary economic importance. Some dusts are valuable and should be salvaged. Others are a menace, a source of damage to your machinery and products, a nuisance to your workmen and neighbors. Frequently dusts are both valuable *and* a menace.

Buell Dust Collectors will solve this complex problem for you in a simple, practical, economical way. Employing the patented Van Tongeren system, their efficiency *pre*determined in accordance with the needs of the individual plant, Buell Collectors offer unique advantages throughout the *dust* range.

Those advantages are clearly and concisely explained in *Bulletin D81*, which will be sent free to any managing executive or operating engineer.

CONTROL THE SMOKE!

This photograph was taken after *one* of two stacks (twins as to boiler size, firing and load) had been equipped with a Buell Fly Ash Collector. After *both* stacks were so equipped the smoke nuisance was ended.

If *you* have a fly ash problem, if *you* want to be sure of high-efficiency, low-cost service, you will find your best approach to the subject in *Booklet A 80*—free to any managing executive or operating engineer.

BUELL ENGINEERING COMPANY INC
SUITE 5000, 6 CEDAR STREET, NEW YORK

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DUST COLLECTORS

SALES OFFICES IN PRINCIPAL CITIES

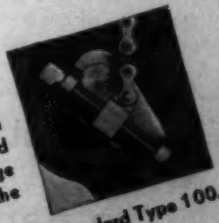
Greater OPERATING ECONOMIES ASSURED BY SUPER-SENSITIVE CONTROL

CASH STANDARD *New Type 100 Series*

THE accurate regulation assured by the super-sensitive response of this New Cash Standard Type 100 Automatic Controller is a source of production profit where extremely close pressure control has a definite bearing on operating efficiency, reduced spoilage and increased output.

Because it is extremely sensitive, this fully compensated controller works within unusually close limits. It reverses itself on a very small pressure change because of the specially designed diaphragm bearing and the frictionless operation of the component parts of the unit.

Many uses: To reduce and regulate pressure (whether above or below atmospheric). . . . To relieve pressure, or control back pressure. . . . To maintain a constant differential pressure. . . . To control rate of flow. . . . To maintain a liquid level. . . . To govern the output of Pumps, Fans, Engines and Turbines, including Automatic Combustion Control.



"Range" Easily and Positively Controlled: "Range" is the amount of change in pressure (of fluid under control) that will cause the power piston to move from one end of its stroke to the other. When it is desired to change the "range", it is merely necessary to change the position of the adjustable block, to which the roller chain is attached (See Illustration).

For accurate—automatic control—Investigate the Cash Standard Type 100.

A. W. CASH COMPANY
DECATUR . . ILLINOIS

PRECISION CONTROL is fully covered in this Bulletin No. 963 . . . It shows how economically the new Type 100 Series Cash Standard Valve can be applied to numerous installations, where precision control is the principal factor.

CASH STANDARD CONTROLS . . VALVES

VANZYME

Converts corn or tapioca starch into the most economical tub or calender sizing a paper mill can use. Samples and complete details of handling on request.

For RUBBER LATEX
Compounding and Vulcanizing Chemicals together with technical literature on their use

RAYOX
Pure Titanium Dioxide
For Maximum Opacity
McNAMEE CLAY
Low Grit and Low Abrasion

R. T. VANDERBILT CO., INC. • 230 PARK AVE., NEW YORK

Editorial ★ ★ ★

LET US NOT FORGET

▸▸▸ THE SEASON FOR national observance of Thanksgiving soon will be with us. This tradition of reviewing the past year and expressing gratitude for the good we have enjoyed is truly an "Old American Custom." From its first observance by the Pilgrims it has become an inspiration and character-building element to the people of the nation.

The expression of gratitude for that which we get has become rather universal, but true thankfulness for the preservation of life, for protection and for our ability to serve others is so often pushed aside by ambitions or desires.

On his page in the Silver Jubilee number of the *National Safety News*, W. H. Cameron, the National Safety Council's managing director, gave expression to an inspiring thought. He wrote:

"It is not in any spirit of egotism that the Council celebrates its Silver Anniversary, but in a spirit of thankfulness, that, through the loyalty and persistence of its thousands of members and friends, we have been preserved to take part in the solution of a problem that touches everything and everybody."

This expression voices true thankfulness, not for personal achievement or success, but for the opportunity that has been presented to serve and to make the country a safer, more cheerful place in which to live.

Thankfulness always should be felt and expressed for that which we receive, but let us also remember that each one has work to do and a service to perform. We should not forget, then, that the opportunity to do for others and the ability and protection given us each day to render that service is one of the greatest blessings given to humanity.

INDUSTRY MUST OPERATE .... AT A PROFIT

▸▸▸ THE OUTSTANDING NECESSITY facing industry in the United States is the necessity of showing profits upon its operations. Nothing sends a cold chill down the spine of the investing citizens of the country like the reports they read every day in their papers of corporation after corporation which have not only made no profits, but have actually operated for nine months of the current year at a loss. It is these deficit and non-profit operations which tend to further freeze the enormous volume of stagnant capital that should be flowing into industry actively. It is idle money which makes idle men and it is deficit operations of industrial units that curtails employment of those at work.

Of course, we know that industrial managements have faced a multitude of discouragements and obstacles, especially during the first half of this year. With excessive, adverse and discriminating corporate taxes; with a punitive administration at Washington openly fighting business expansion and engaging in active competition with private business; with a complete break-down of the Wagner Act and disruption of labor and employer relations; with the terrifying approach of another world war; and with the utter confusion into which the whole country has been thrown by the imposition of the loosely drawn and unintelligible wages and hours bill, business has had plenty of pegs on which to hang an alibi for deficit operations. However, our point is that these alibis are not warranted in general, especially during the past four months.

We have frankly been amazed at the paradox we have discovered in our research into industrial operations. To-day, ask most any manager of an industry how his business is and he tells you that as far as volume goes, he has plenty of orders, but "we can't make any money." Why? The answer is invariably "because our industry price schedules are shot to pieces."

In other words, they are enjoying a "sellers" market, but letting the buyers set their own prices. Evidently, they do not know the difference between a "sellers" and a "buyers" market, which is one of the primary requisites of knowledge that management should possess.

The automobile industry has only just this past month reached a production percentage of 50 per cent. It is, from a volume standpoint, still operating in a "buyers" market, but what citizen, who buys a car to-day, even dares to try to tell the automobile dealer what price he will pay. He pays the price which the automobile maker places on his car or the would-be purchaser goes without a car.

By contrast, look at the situation in the paper industry, the makers of the most necessitous commodity in America. Some of its divisions received—and still are receiving—orders during the past four months aggregating 85 per cent and 90 per cent of capacity,—literally pouring into an insistent demand-market the largest tonnage of paper products ever known in its history,—and still its price schedules are shot and down mighty nigh to the lean tonnage bankrupt year of 1932.

What a paradox? What's wrong with the picture? Absence of sales and profit-mindedness. It cannot continue.

General business is expanding vigorously. It is destined for higher levels than we have known since the present administration came in. Volume tonnage is here. It is increasing. The recent war scare has crystallized public opinion upon the thorough re-armament of these United States, a huge tonnage requirement which will take all of the capacity of existing producing units in all lines. This recent additional United States production requirement will run the factories, mills and mines of the country for years to come.

In the fact of these conditions, industry in general and the paper industry in particular has no alibi for non-profit operations. Profit-producing sales will thaw out rivers of frozen capital and put millions of idle men to work at decent living wages. The present unprecedented demand for paper gives the paper industry its preëminent opportunity to make good earnings.

CURRENT THOUGHT

GETTING A NEW PERSPECTIVE

WILLIAM SIBLEY

OH—the woes of life hang heavy. . . . And there's naught to struggle for. . . . And one sees the bleak reflections. . . . Of days that are no more—At forty-four!

OH—the "whoas" of life are many. . . . Though I scorn them by the score. . . . And continue with my painting. . . . On each dismal barroom floor. —So my head hangs, shamed and weary. . . . For I feel a great deal more—than forty-four.

Give me blessings, papermaker. . . . Though my actions, you deplore. . . . I'll confess, there's naught to envy. . . . In a brow so swelled and sore. . . . For I've lived a hundred crowded years. . . . Yes, and more—In forty-four!

Thinking thus, I slammed the roll top desk a week or so ago and took a little vacation on "The Old Bentz Place;" a farm located in middle-Wisconsin, owned by a friend of mine. And, I'm glad. The eight days spent there did me a lot of good—mentally, physically and spiritually. I did things up on the farm which even now are costing me beaucoup dollars in osteopathic treatments, but even so there will come from the visit a very real good. I asked questions up on the farm which oriented me anew regarding habits and customs of farmers and this will do me much mental good throughout the ensuing year. I had arguments up on the farm which broadened my perspective of Life (with a capital "L") and thereby do me much spiritual good.

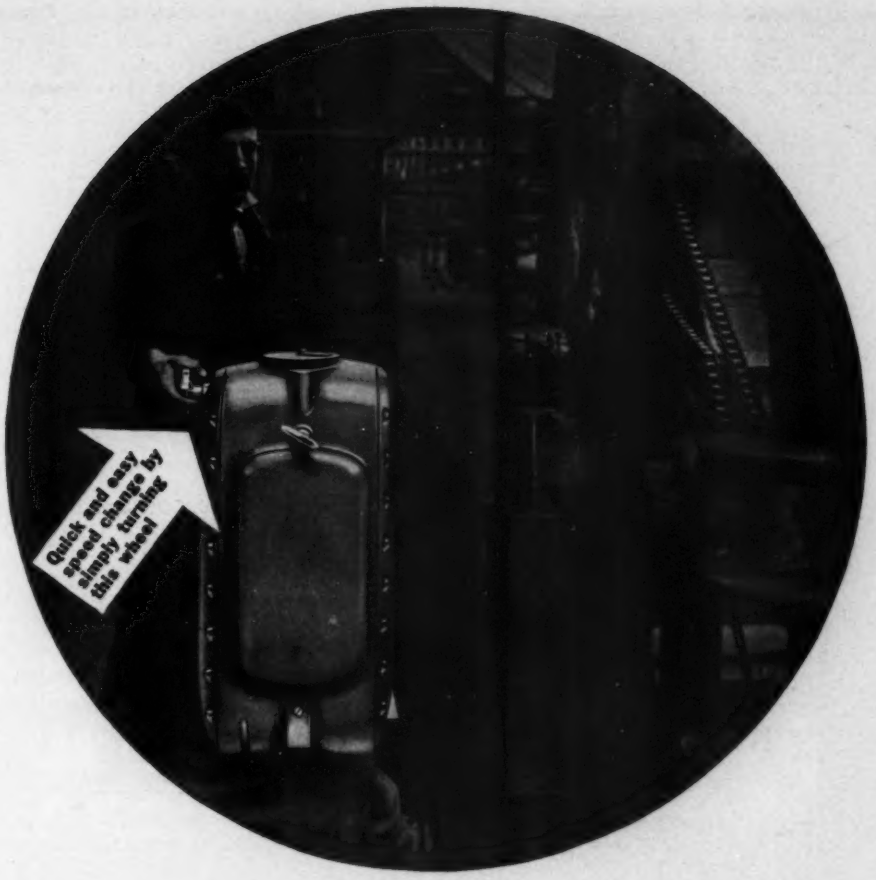
One thing this little eight-day vacation on a very real, honest-to-cow-and-horse farm did for me was to correct my perspective. It made me realize that I had lost what little rural atmosphere I ever possessed. Having been born and reared in a small town, and on a farm, I had long fondled the belief, that at heart I was a farmer. I believed that I knew the thoughts and beliefs of farmers. What I had lost sight of was the fact that I had lived in Chicago ever since I was discharged from military service and that the closest thing I knew to a concrete silo was a stretch of concrete pavement. What I had lost sight of was the fact that many of the magazines which *I* read back on the farm during my youth had long since dropped from existence and that farmers are now reading papers new and strange to me—in new and strange ways—with new and strange background beliefs. What I didn't know was the fact that my "farm" experience was merely a matter of quotation marks—that there was nothing actual or real in my farming knowledge—that I had become synthetic, so far as agriculture was concerned.

So listen, mister—if *you* want to realize at first hand just how much of a farmer *you* are—go out to some farm where you can fraternize with the manager or the renter on an equal plane—and milk cows. You may have milked plenty of cows in the days-gone-by,—but have you milked them recently? Do you know what solid, substantial, and very real aches the cow's teats start in your fingers, entire hands, wrists, and forearms? Just start in to squeeze the teats for enough time to drain one cow's udder (not forgetting to strip her) and you'll realize that after all it is easier to pound a typewriter. (Or voice your ideas down the defenseless throat of a Dictaphone). . . . And you'll perhaps find that they seem to build cream separators higher now-a-days. Back in the old days I have poured many cans of milk into the tank of a hand-driven separator ("Primrose" I believe they called it)—but now (at forty-four), the tank of the self-same separator is *so* high, and the upright cans of whole-milk are *so* heavy, that even the electric power which now drives the machine is overloaded. Somehow the milk seems harder to get and the pails are bigger and the tank is higher and the new brood of kittens is thirstier and more ubiquitous.

Then up on the hill, where the manager (and me—for what value I am!) is skidding off the big boulders and large stones so he could seed alfalfa mixed with clover for pasturage;—the stones were *so* heavy that I presently had the most urgent sort of business elsewhere—and forgot to come back. Yes—he had a tractor instead of two stout horses. He had a lot of things which would make farming easy. But somehow, for me (who had not farmed for years—a couple of decades or more), the things he used didn't make farming very easy. It still is hard manual work; but work of a kind that must be mixed with much brains regarding seeding, cultivating, animal husbandry, horticulture, and feeding.

Much to the manager's relief and the owner's benefit—I stayed only a week. I came back to Chicago and my desk at the end of eight short days. Yes, the desk at which I have slaved for years. . . . Did I say "slaved?" Well—I feel myself terribly abused if I have to work ten or twelve hours a day. But Merrill Schramm, the farm manager, works 18 hours a day during the summer time and 12 hours a day during the winter time—and thinks nothing of it. As I write this—at 8:30 p. m.—he is still at his separating or feeding the skimmed milk to the hogs. And, perhaps even tonight he may have to candle eggs for an hour or so. So perhaps I *needed* a new perspective.

But on returning—I find that a rural vacation has as its concomitant a commercial hang-over. I find my desk piled high with work which no one else (apparently) could do—and so I am now behind a half-dozen "8-balls." But, as I look at this desk, piled high with things which must be cared for immediately—I say: "I would I were beneath a tree—a-sleeping in the shade—and all the bills I have to pay were—PAID. I would I were beside the sea—or sailing in a boat—with all the things I have to write—WROTE. I would I were on Bentz's hill—a-sleeping in the sun—with all the things I have to do—DONE!



EVERY MACHINE GEARED EXACTLY TO THE CORRECT SPEED FOR EACH JOB

● Correct machine speed is mighty important. Practically every job has a different "ideal" machine speed. Variances in weather, materials, operator's skill, etc., should be met with changes in machine speeds. When your machines are equipped with the Link-Belt P. I. V. Gear, you can set them — while operating — to the exact predetermined speed you require. And, "exact" in this case means to the fraction of an R. P. M. A twist of the wrist sets the indicator to the speed desired — quickly — positively. No guesswork — no alibis — no wasted time!

A higher quality of work, and money saved in both production time and spoilage, are among the results achieved in equipping machines with the P. I. V. Gear. It has these features: Gear-like teeth — cannot slip .... Minute speed changes made while machine is running.... All-metal — self-oiling .... Completely sealed housing.... Compact — requires less space .... Horizontal and vertical mountings .... Motorized and gear set models .... Automatic, manual, direct, or remotecontrol. Send for Book No. 1574.

LINK-BELT P.I.V. GEAR SPEED VARIATOR

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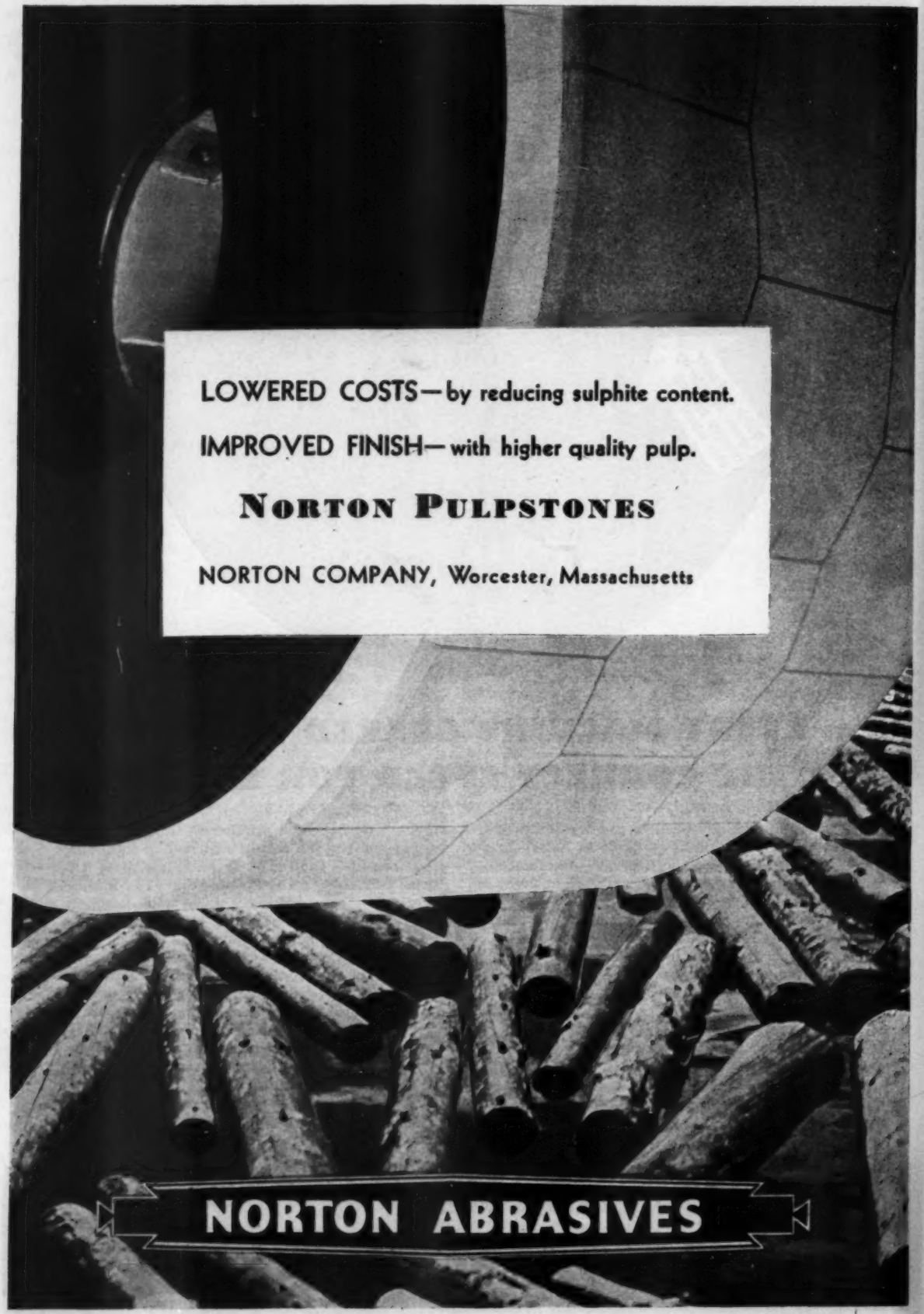
LINK-BELT POSITIVE DRIVES INCLUDE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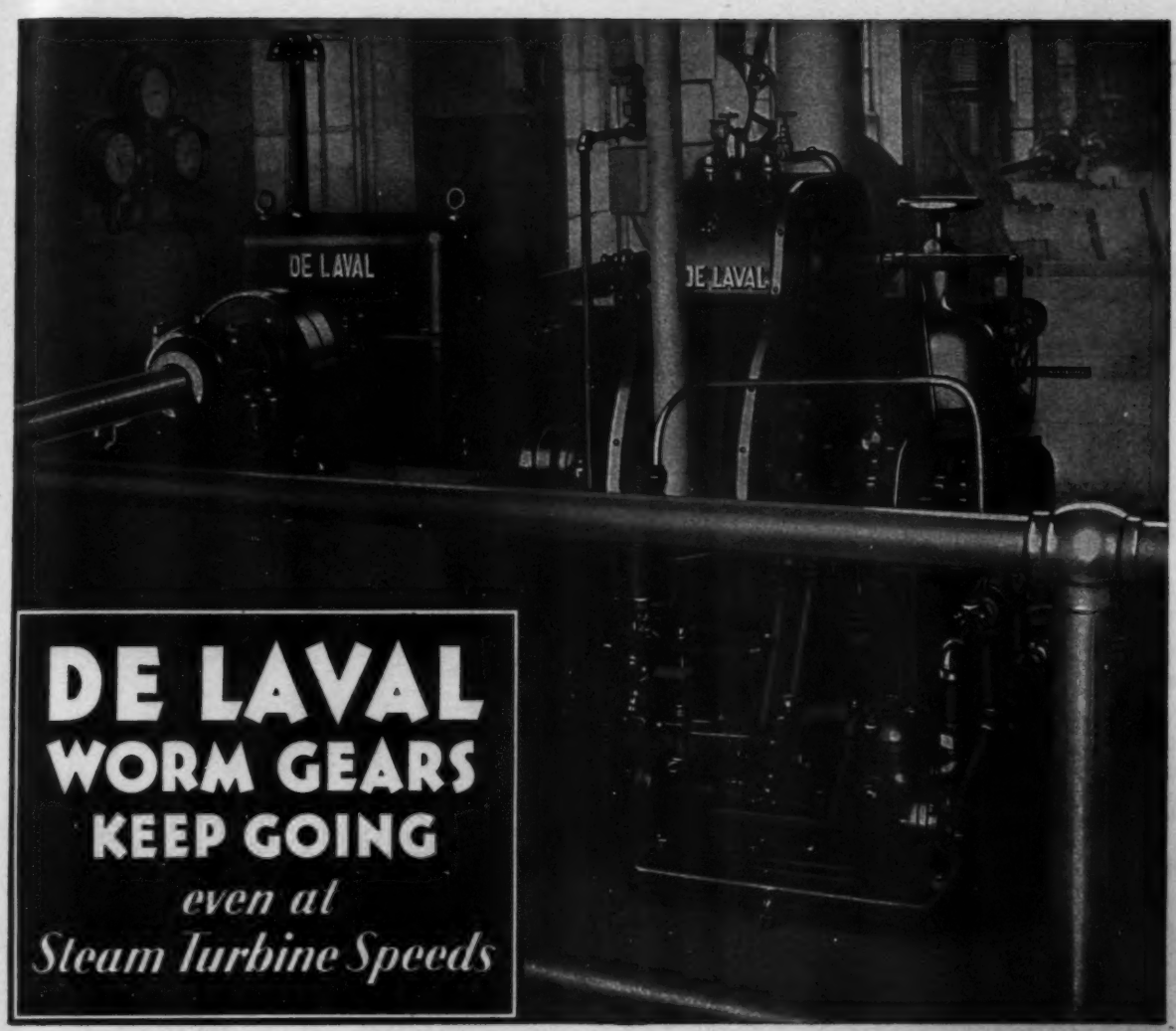


DE LAVAL WORM GEARS KEEP GOING

even at Steam Turbine Speeds

FOR EXAMPLE, one like that shown has transmitted around 300 hp. from a variable speed steam turbine to a paper machine

24 HOURS A DAY FOR OVER TWELVE YEARS,
but has had no replacements or repairs.

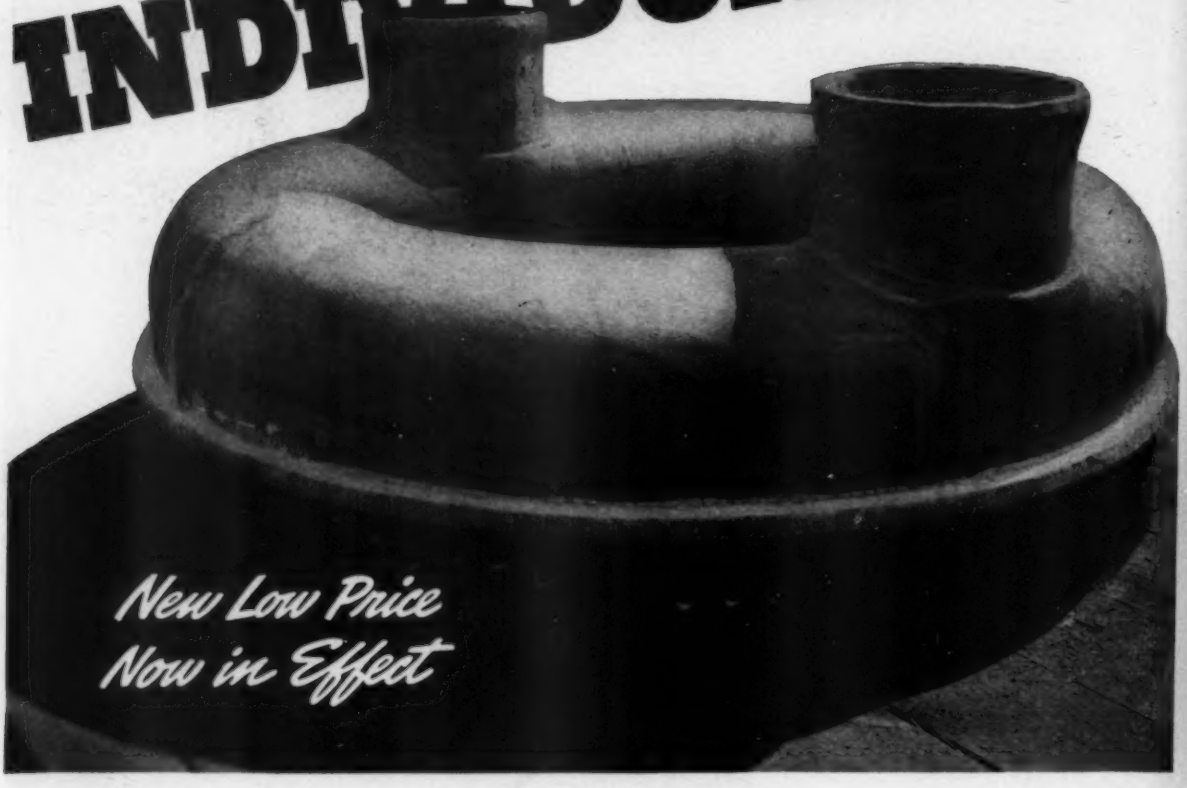
The continuous transmission of large amounts of power at high or low speeds is the duty for which De Laval worm gears have been particularly designed. They are completely enclosed and self-lubricating, requiring no attention other than checking the oil level, and are unaffected by dirt, grit or moisture.

1080

DE LAVAL *Steam Turbine Co.*
TRENTON, N. J.

MANUFACTURERS OF STEAM TURBINES, PUMPS, CENTRIFUGAL, PROPELLER AND ROTARY TYPE, STEAM CENTRIFUGAL BLOWERS AND COMPRESSORS, WORM GEARS, HELICAL GEARS, HYDRAULIC TURBINES AND FLEXIBLE COUPLINGS . . . SOLE AGENTS IN THE PAPER MILL FIELD FOR [illegible]

THIS LEAD IS A RUGGED INDIVIDUALIST



RUGGED? Yes, very! Tellurium Lead is not only tough to begin with — it develops increased toughness under stress. *It work-hardens.* When rolled, stretched or hammered, it actually becomes stronger. As a result, turn-over points and joints are less subject to cracking.

Furthermore, where vibration occurs, this capacity to develop latent strength minimizes buckling and creeping. This same quality also gives Tellurium Lead improved resistance to fracture due to repeated heat changes.

INDIVIDUALIST? That word also describes Tellurium Lead. One outstanding point of individuality is its high resistance to corrosive acids. Even at temperatures that tend to approach the melting point of the metal, this lead shows unusual ability to withstand the attacks of sulphuric and numerous other destructive acids. In plant after plant, it has prolonged the life of equipment . . . and reduced the number of shutdowns for repairs.

Tellurium Lead of our manufacture is St. Joe chemical lead alloyed with a small quantity of tellurium. It gives the advantages of this time-tried chemical lead plus important new ones. Yet now, due to a price reduction, it costs only a fraction of a cent more per pound than chemical lead. Tellurium Lead is available in sheets, pipe and coils. For further facts, write to nearest branch.

Typical User Reports

"I wish to say that your Tellurium Lead pipe has proved all you claimed. It is easy to weld and easy to flange. Also the flanges stand up a good deal better than ordinary lead as they seem to actually become stronger at the turn-over point."

Another company writes: "Our coils are used in a dilute sulphuric acid solution. The lead coils previously installed gave comparatively short service (about 6 months). Tellurium Lead coils have been operating continuously 24 hours a day for one year and as yet no blow-outs have occurred. No repairs have been necessary."

NATIONAL LEAD COMPANY

New York, Baltimore, Buffalo, Chicago, Cleveland, Cincinnati, St. Louis; National-Boston Lead Co., Boston; John T. Lewis & Bros. Co., Philadelphia; National Lead & Oil Co., Pittsburgh; Georgia Lead Works, Atlanta; Gibson & Price Co., Cleveland; American Lead Corporation, Indianapolis; Master Metals, Inc., Cleveland; The Canada Metal Company, Ltd., Toronto, Montreal, Winnipeg, Vancouver.

Tellurium Lead

QUIGLEY SERVICE Renders Valuable Help in Emergency

Helps Put Gas Plant in Operation When Flood Deluges Main Works and Hurricane Wrecks Gas Holder.

The September 21st hurricane, flood and tidal wave left a wake of destruction in and around Providence, R. I. No electric power. City isolated. Business suspended. Property damage untold millions.

Providence Gas Works' entire 40 acres submerged. Electric generators and motors flooded. Gas holder destroyed. No electricity to run coke ovens. Company fell back on carburetted water gas plant, run only intermittently. Fire clay linings and brick bond of water gas sets had spalled considerably,

Quigley Serviceman at Work.

Plant of Providence Gas Works as Raging Flood Waters Deluged Yards and Equipment.

Photo by Chas. S. Williams, Jr.

and concern was felt as to how long they would last. Sets had to be patched due to clinkers being barred off to keep them in working condition.

Gas company called Frank M. Leach, Quigley Co's., Pawtucket Manager. Leach went to Quigley warehouse. Got enough material to repair the sets, and, with the QUIGLEY REFRACTORY GUN which Providence Gas Co. has, surfaced these linings with material which prevented further erosion.

All of this patching was done without a shutdown, a task that would have been nearly impossible to accomplish in any other manner.

Only after helping with all this work, with the light of two candles, had Leach time to write his report. (See photo above.) Many dwellings within a block of his home were destroyed.

The Quigley organization has many experienced Service Engineers ready to give practical advice and assistance to industries, that plants may operate efficiently at minimum maintenance cost.

East Providence Gas Holder Destroyed by Hurricane September 21, 1938

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QUIGLEY COMPANY, INC.

56 W. 45th Street, New York, N. Y.

Makers of HYTEMPITE *"The World's Standard High Temperature Cement"* • FIRE BRICK • INSULBRIX • INSULAG • INSULBLOX • INSULCRETE Q-CHROMASTIC • HEARTH-CRETE • CAST-REFRACT • Q-SEAL • TRIPLE-A PROTECTIVE COATINGS • Q-CHROME • DAMIT ACID-PROOF CEMENTS • *ANNITE*

Distributors with Stocks and Service in Important Industrial Centers Throughout the United States, Canada, and in 32 Other Countries. In Canada, Quigley Company of Canada, Limited, Lachine, P. Q.

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Supreme

Perkins Quality Rolls

Perkins roll shop is the largest in the world.

Perkins organization is always prepared to build your rolls to meet exactly your production requirements.

Perkins refills and remakes include the rolls of any manufacture, domestic or foreign, for any application in the paper industry.

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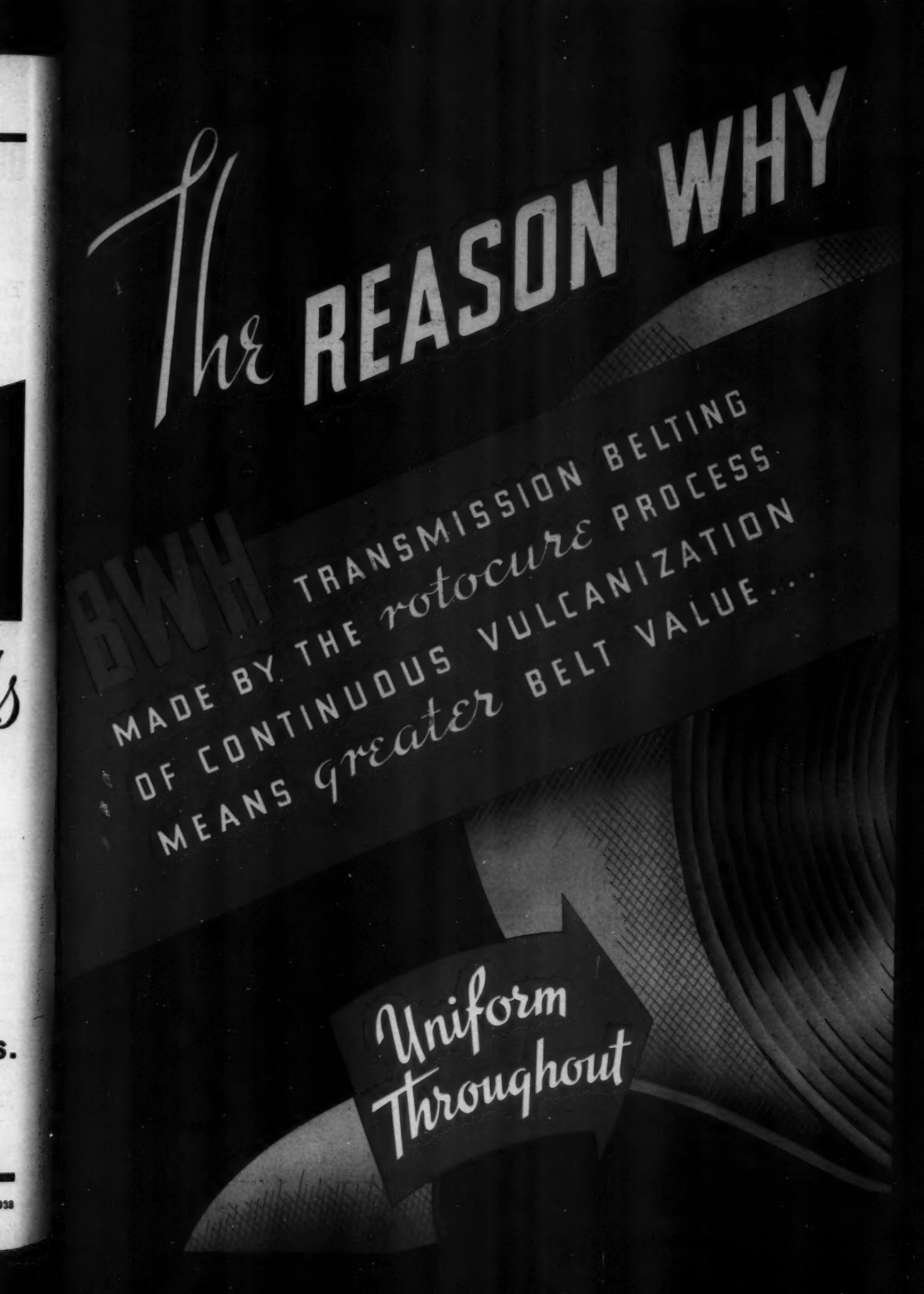
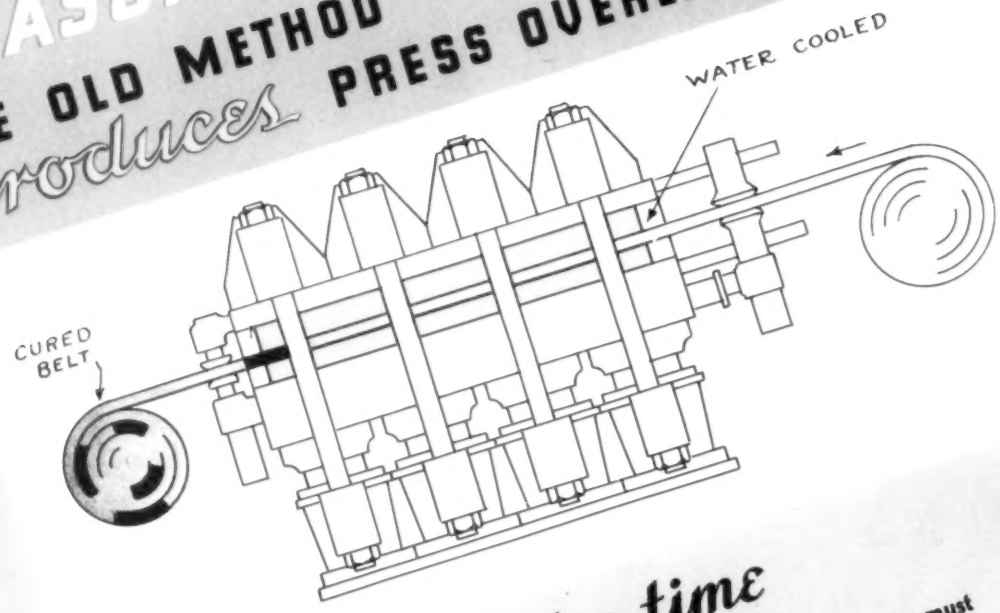
Engineers and Manufacturers

Cotton Rolls	Chilled Iron Rolls	Friction Calenders	Rag Cutters
Paper Rolls	Granite Press Rolls	Embossing Calenders	Stock Cutters
Embossing Rolls	Glassine Supercalenders	Mullen Paper Testers	Paper Dampeners
	Web Supercalenders	Tensile Testers	


The REASON WHY
BWH
TRANSMISSION BELTING
MADE BY THE rotocure PROCESS
OF CONTINUOUS VULCANIZATION
MEANS greater BELT VALUE...
Uniform
Throughout

The REASON WHY

THE OLD METHOD produces PRESS OVERLAPS

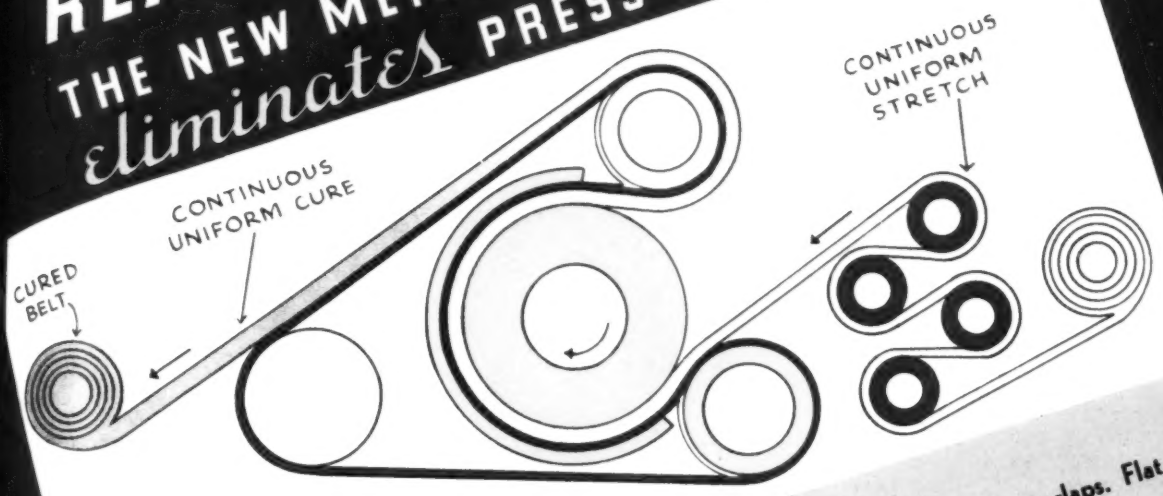


Vulcanized 30 feet at a time

When only 30 feet of belt can be cured at one time the platens of the press must be raised and the next 30 feet drawn into the press. The human element must be depended upon; yet it is true that operations manually performed are rarely the same when repeated. When placed in the press ready for vulcanizing, the belt is supposed to be stretched a definite percentage. Careful control of this stretching is essential; otherwise the belt may stretch abnormally or even break in service. The accuracy of this control depends on the conscience and alertness of the operator. Nevertheless he is expected to open the press at exactly the right minute, pull the belt exactly the right distance, and stretch the belt the exact number of inches. On all belts made in the platen press there is at the end of each press length a narrow section which is vulcanized twice, with resulting distortion and injury of fabric, and since over-vulcanization is destructive we now have a belt with injured strips— three potential defects in approximately every 100 feet of belting. Such a belt is partially crippled when it goes on the drive. The result: a variable stretch factor and a definite decrease in resistance to flexing and ply separation in service.

BOSTON WOVEN HOSE

The REASON WHY THE NEW METHOD eliminates PRESS OVERLAPS

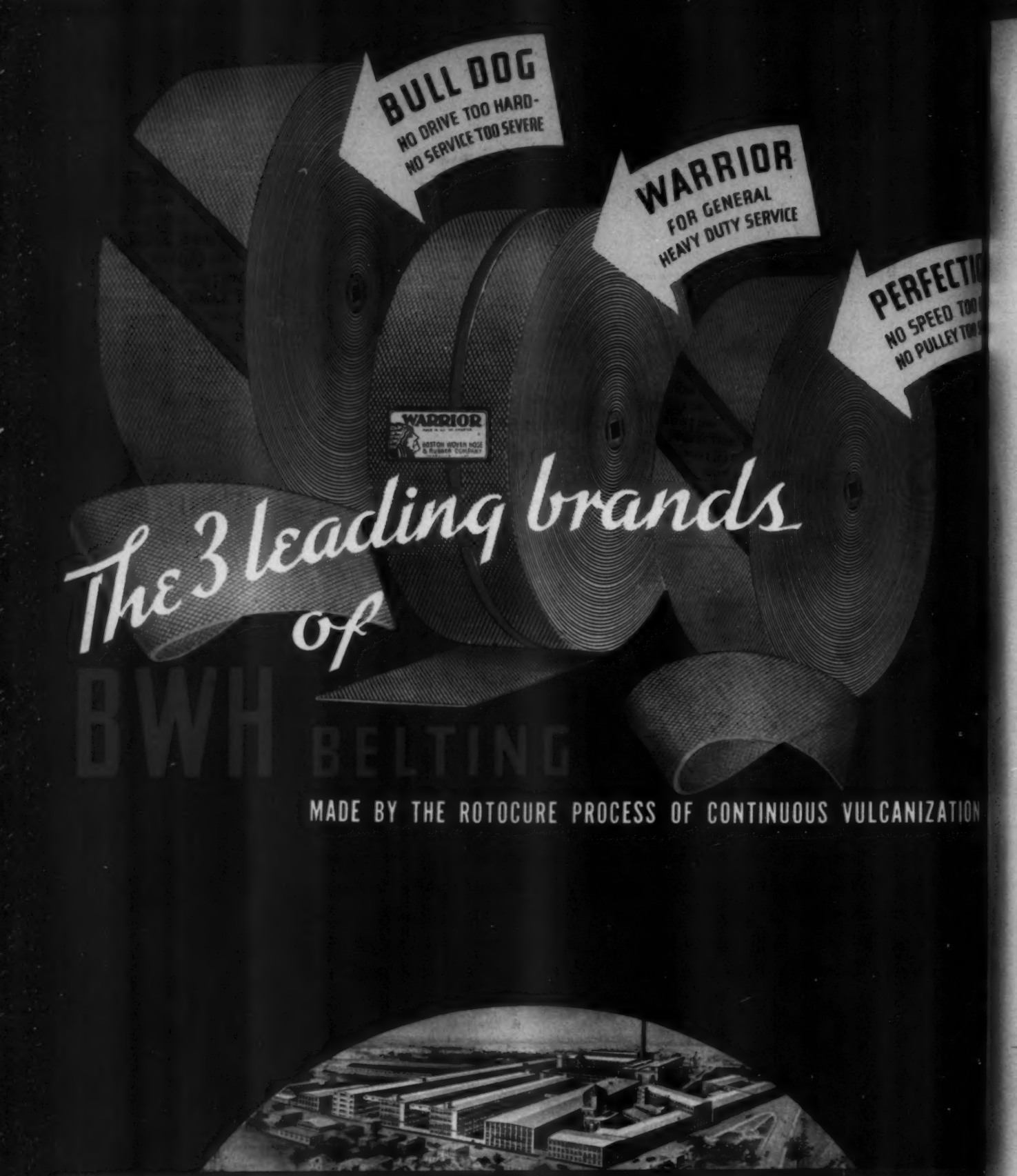


Manufacturers of rubber belting have tried many methods of eliminating press overlaps. Flat presses equipped with water-cooled ends were developed, but the difficulty was only partially overcome because, with the most skillful operators, over-vulcanization still prevailed. Another expedient was to so change the compounding of the rubber as to minimize the effect of over-vulcanization, but here again the device was a makeshift rather than a solution, with the result that the difficulty remained unsolved.

The BWH Rotocure Process of Continuous Vulcanization is the only practical method of producing uniform rubber belting entirely free from press overlaps. It solves the problem because the belting is processed on an exclusive patented rotary type of press, radical in principle. It substitutes uniformity for variation by making the vulcanizing process automatic instead of spasmodic. Uniformity results not from the skill or experience of the operator, but from the unvarying precision of the machine. The result: a uniform belt uniformly vulcanized and uniformly stretched, that will give uniform service.

one continuous operation

RUBBER COMPANY



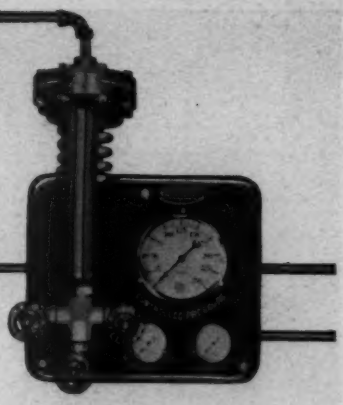
The 3 leading brands of BWH BELTING

MADE BY THE ROTOCURE PROCESS OF CONTINUOUS VULCANIZATION

BOSTON WOVEN HOSE & RUBBER COMPANY

Continuous vulcanization is a contribution to industrial economy, developed solely by the Boston Woven Hose & Rubber Company in its works at Cambridge, Mass., U.S.A., an organization engaged not merely in manufacturing and selling but in maintaining and

First Assistant



TO THE MAN IN CHARGE OF POWER

Nowhere is there more need for exact pressure control combined with economy and convenience than in a paper mill power plant. The Masoneilan No. 50 Master Controller provides just that sort of control

- **in desuperheating service**
- **on turbine and bleeder make up service**
- **on pumps**
- **in heating and evaporating service**
- **on primary and auxiliary steam lines**
- **anywhere accurate, positive reducing or back pressure regulation is required.**

The controller is hydraulically operated for stability and economy; is sensitive to slightest pressure changes yet positive in action even under wide fluctuations in demand; is easily adjusted, practical, simple and foolproof; may be installed with pilot on wall or panel or mounted directly on the main valve; cuts maintenance costs. Investigate the advantages of the No. 50 Master Controller for your plant. Write for Bulletin No. 50.

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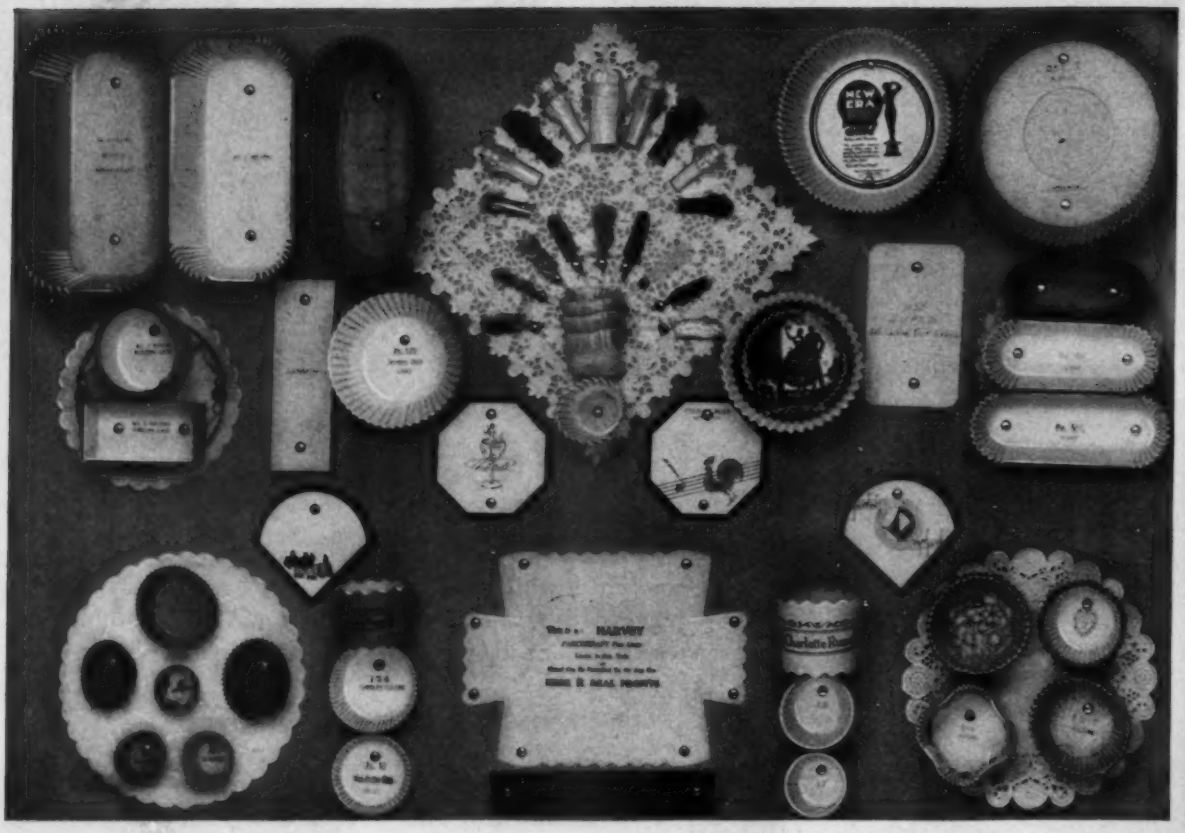


THE QUALITY AND PRICE OF PAPER SPECIALTIES
. . . are determined at the WET END *of the machine*

To the technically uninformed the difference between paper specialties and the stock from which they are formed appears as great as that between modern paper stock and Egyptian *papyrus*. But to the industry, every fluted cake cup, nut dish and doily is only a glorified scrap of paper stock.

To the manufacturer of such specialties the primary concern is to secure the right kind of base stock at the lowest possible cost. This is determined by the formula of the furnish and by the uniformity, rapidity and thoroughness with which the water is extracted from the web as it travels from the "wet end" of the paper machine to the dryers. And this, in turn, is best accomplished by Hamilton Felts.

From the finest tissues to the heaviest board, there is a Hamilton Felt that does your work better, faster and at lower cost.

SHULER & BENNINGHOFEN, HAMILTON, OHIO

• Miami Woolen Mills, Established 1858 •

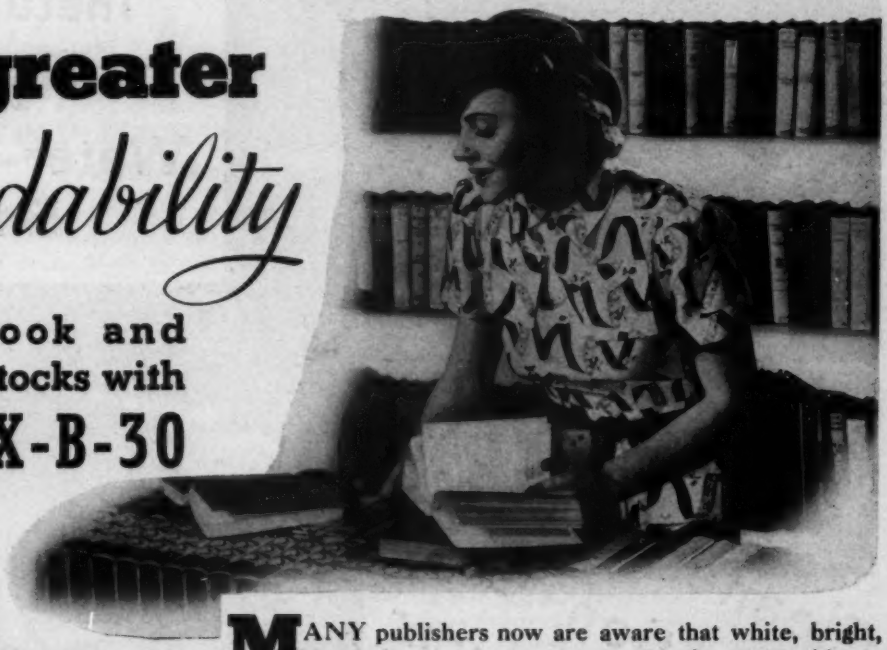
Hamilton Felts are marked by two blue lines full width of the felt and by one shorter blue line midway between them.

Hamilton Felts

OPACITY—WHITENESS—BRIGHTNESS

Give greater *Readability*

to your Book and Catalogue Stocks with TITANOX-B-30



MANY publishers now are aware that white, bright, completely opaque paper adds immeasurably to the eye-appeal of any book or catalogue because it increases readability. Discerning paper manufacturers sensing this situation, are stepping up the whiteness, brightness and opacity of stocks for such purposes. TITANOX-B-30 is helping them to obtain splendid results.

This modern pigment produces opacity, whiteness and brightness with economy. A relatively small amount reduces "show through" to a minimum. Because of its exceptional whiteness and brightness, it gives great brilliance to paper and effectively masks any discolorations. Its extreme fineness and easy dispersion make for superior working qualities as well as better printing surfaces.

TITANOX B-30 is pure titanium dioxide in combination with barium sulphate (blanc fixe). It has a higher refractive index than any commonly used paper pigment. Its use permits employment of lighter weight sheets, without loss of opacity, thereby making for reduced cost of printing and mailing.

TITANOX-A (pure titanium dioxide) is recommended for papers where pigmentation must be held to a minimum, and also in combination with ordinary, cheaper fillers.

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TITANOX

Before and After Installation of Ryertex Water-Lubricated Bearings

Cleaner Stocks . . . Lubrication Costs Eliminated . . . Longer Life Assured with

Ryertex Beater Bearings

Ryertex Bearings in service on beaters for more than three years show no signs of wear. Their high compressive strength and ability to withstand shock load makes them particularly suitable for these machines.

The use of water as sole lubricant promotes cleaner stocks. Not only is the cost of oil and grease eliminated, but also the time consumed in applying these lubricants. The cleaner working conditions are a safety factor worthy of recognition.

Ryertex Bearings have a very low co-efficient of friction (considerably less than brass or babbitt) and will not wear the shaft. This results in longer bearing life and definitely lower power consumption.

The non-metallic composition of Ryertex Bearings eliminates the possibility of badly scored shafts resulting from overheated bearings, and offers great resistance to acids. Initial cost is moderate and no radical change in housing is necessary when they are installed to replace bronze or babbitt liners.

Other paper mill applications include: bleachers, jackladders, conveyors, grinders, digesters, log-hauls, slashers, drum barkers, screens, beaters, knotters, bark presses, chippers, chip crushers, deckers, paper machines and refiners. Bulletins will be sent on request.

Joseph T. Ryerson & Son, Inc., Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.

RYERSON

Steam Generation

in a New England Paper Mill

CALVIN P. ELDRED, Mechanical Superintendent
Hollingsworth & Vose Company

HOLLINGSWORTH & VOSE COMPANY has plants at East Walpole and West Groton, Massachusetts, where rope and jute manila papers are manufactured. It is the boiler plant of the East Walpole mill, the main plant of the company, that is the subject of this article.

The steam load of the mill, which totals about 40,000 lb. per hour for a 24-hour day, was formerly generated in six Cahall and four Dillon H. R. T. boilers. These boilers were originally all hand fired, and the coal and ashes were handled by hand.

When modernization was contemplated, a complete study and report was made of this plant. The report included a detailed cost of operation, a statement of necessary expenditures because of the physical condition of the equipment, a detailed cost of desirable new equipment, and a statement as to probable savings in steam cost and in yearly operating costs that would be obtained through making the changes. In view of this report, Louis E. Vose, vice president and general manager, decided in the fall of 1927 to install water-tube boilers, flue and chimney, together with overhead coal bunker and ash handling equipment; and Jackson & Moreland of Boston were retained as consulting engineers for the final planning, purchase, and erection of all equipment.

A boiler pressure of 225 lb. with an ultimate superheat of 100 deg. Fahr. at 200 per cent rating was decided upon because of four reciprocating engines of about 2000 hp. total capacity which operate at 150 lb. steam pressure, and which determined the operating pressure until the installation of a turbo-generator. At the time, a final steam temperature of about 500 deg. Fahr. appeared conservative.

The Neponset River serves as the source of feedwater for the plant. This water, while not particularly hard, carries considerable quantities of decayed vegetable matter at certain seasons of the year, and is always turbid.

Sterling boilers, two of them, were selected as being a type adapted for the load and the feedwater conditions. The two boilers, of the three-pass type and each with 5000 sq. ft.

This article describes the equipment of an early pulverized fuel plant in a New England paper mill. It gives the operating costs of the plant during the ten-year period (1928-1937), a decade of widely varying conditions of business, fuel costs, and steam load—factors which vitally affect the savings of new equipment, no matter how carefully expected results are calculated—and presents figures showing the savings with the new equipment over the old. It is hoped that these figures, and the experience of operation, may be useful in planning new boiler plants.—Author's Note.

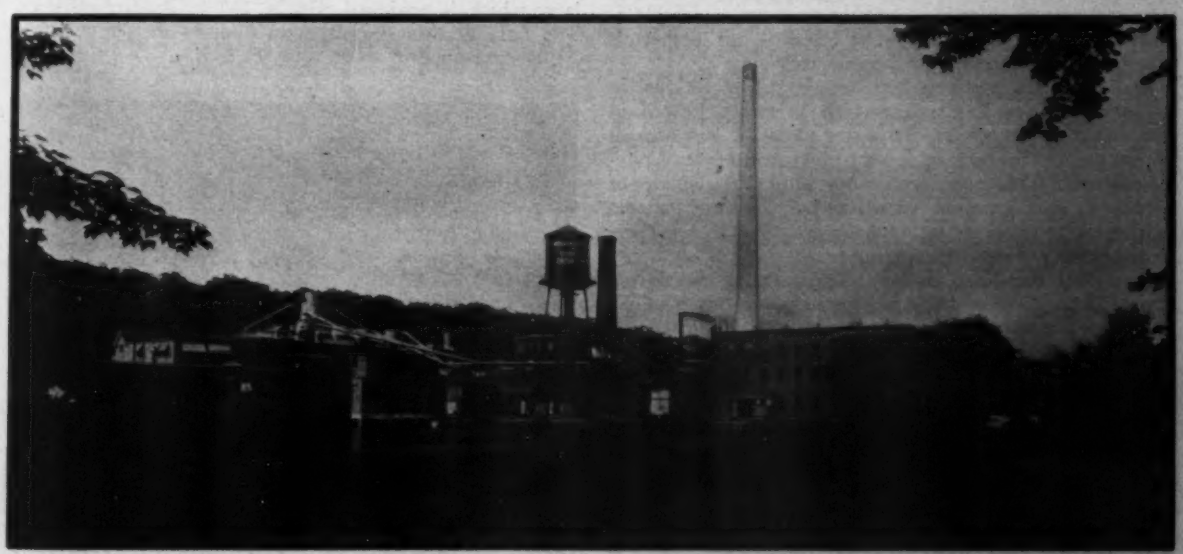


Figure 1—General view of mill.

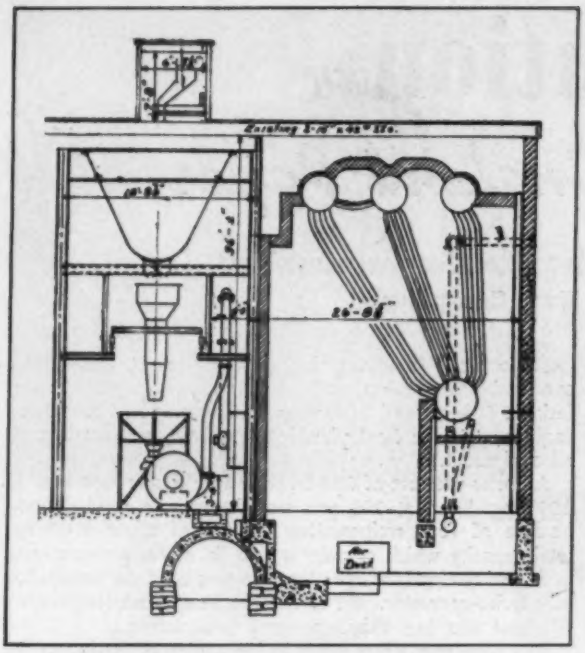


Figure 2—Elevation view in boiler room.

of heating surface, have Babcock & Wilcox superheaters and Diamond soot blowers. They do not have air preheaters or economizers.

It was desirable to keep the new equipment within an existing building of limited space; and the location of the new boilers was restricted by the old equipment then in use. Further, the boilers were of ample capacity for the existing load so that reasonably low exit gas temperatures were expected.

The two boilers were set singly with the center line of the mud drums ten feet above the floor, and the furnaces were built nine feet wide to accommodate the Class XIII Sterling boilers eighteen tubes wide.

The furnace volume gives heat liberations of 18,750 B.t.u. per cu. ft. per hour at 250 per cent rating. Under these conditions, water walls did not seem necessary.

The desirability of water walls was appreciated; but the extra cost was considerable, and they were not as reliable as today. Likewise, had they been installed, air preheaters would have been needed for the secondary air.

Because of the relatively high freight charge for fuel in the section of New England in which the mill is located, in comparison to the cost of coal at the mines, it was decided to plan the fuel burning equipment for a good grade of bituminous coal. There were certain operating characteristics of pulverizers that appeared attractive, but choosing between pulverizers and stokers was difficult ten years ago. There were few unit pulverizer systems in the locality, and they had not long been in operation. Reliability, of course, was desired; since there could be no interruption to steam supply in a three-machine paper mill. It was felt that reliability could be obtained with unit pulverizers by installing two units, each of capacity to carry the total load, with cross connections to serve both furnaces from either pulverizer.

This point of view was reported to Valentine Hollingsworth, president of the company, who has always been interested in the power plants of the mills. He favored pulverizers for the type of mill load because of the greater range of fuel characteristics available when purchasing coal.

Having selected pulverizers, Riley No. 4 Atritas and Riley burners being purchased, and with no air preheaters planned, it was decided to air-cool the furnace bottoms, and to purchase air-cooled furnace walls to supply the hot primary and secondary air for the Atritas. Through a suggestion from the operating crew, some of the air from the side walls is passed through the floor ducts in series, and a final primary air temperature of 300 deg. Fahr. obtained for the pulverizers. The air ducts under the furnace floor were first constructed of heavy building tile, but were later replaced with special shapes from McLeod & Henry. These shapes are protected by one course of fire brick laid on edge. The air-cooled side walls, purchased from the Bigelow Company, are of its usual suspended wall construction, using Woodland X shapes. The flat arches in the top of each furnace, also of the same material, were purchased from the same source.

The Frank E. Ross Company of Boston was the mason contractor.

The all-refractory furnaces have given satisfactory service with reliability and moderate repairs. They also are good at maintaining ignition at low ratings and with low volatile fuels. Water cooling, particularly at the bridge walls, of course, would permit the carrying of higher load ratings with lower temperatures on the furnace bottoms.

Although its advantages are appreciated, no combustion control was installed at the time of the modernization. Later, a Cash coal feed control was purchased. This control is operated from the steam pressure, but the secondary air is still adjusted by hand. Since the total steam load is quite steady, the arrangement is fairly successful. Modern combustion control, however, is highly desirable.

The boiler instruments include a Venturi meter to measure feedwater; Bailey meters to measure air flow, steam flow, furnace pressure and temperature of exit gases; and Ranerex meters to measure CO_2. Likewise, in addition to the regular pressure gauges, there is a ten-inch gauge, indicating from 145 to 175 lb., and a recording gauge with a ten-inch chart to permit close observation and recording of steam pressures. Such instrumentation is believed to be the minimum for intelligent boiler room operation.

The coal handling equipment, supplied by Underwood Machinery Company of Boston and consisting of flight and apron conveyors and bucket elevator, takes coal from a receiving hopper to a No. 1 Sturtevant swing sledge mill. From the Sturtevant mill, the coal is carried by the bucket elevator to a belt conveyor with tripper over a 150-ton storage bunker. Discharge gates on short spacing on the under side of the bunker feed the coal to the hopper of a traveling larry which is equipped with a 300-lb. Richardson scale. The larry in turn discharges to hoppers located over the Atritas and holding about 1000 lb. each.

Figure 3—General view in boiler room.

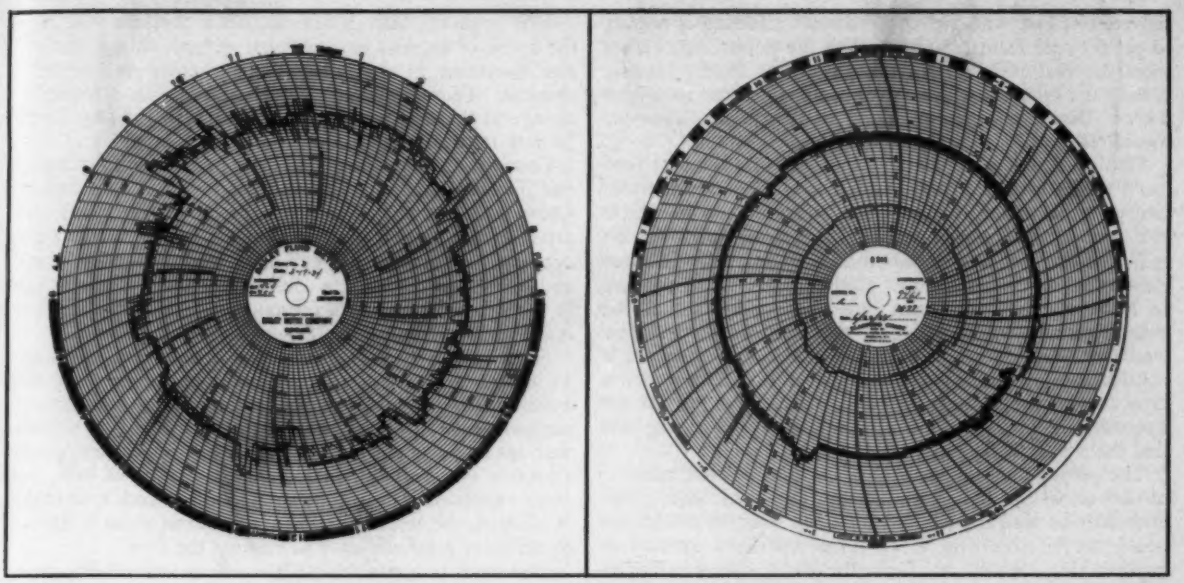


Figure 4—Bailey Meter charts before and after automatic regulation of coal feed.

Coal is received directly from truck to the receiving hopper, or by means of a chute from cars. The traveling larry under the storage bunker allows the bunker to be filled once a day, and it does not require the services of men twenty-four hours a day to make sure there is coal feeding at any particular discharge gates. Then, too, the one Richardson scale serves the entire boiler room.

The coal storage bunker is of the conventional suspension type with curved bottom. Even with close spacing of the discharge gates, trouble is experienced with dead spaces.

The importance of good coal handling equipment in unit pulverizer systems, particularly between the bunker and the pulverizers, should be stressed. It is in this location where trouble generally lies on days when the coal is wet. The equipment operates with little attention, except when the coal is very wet. Also, screens, which were later installed over the Atrita coal hoppers, have been valuable in catching both magnetic and non-magnetic foreign matter that otherwise might have given serious trouble with the Atrita coal agitators or the Atritas themselves.

Ash handling equipment for the modernization of the boiler plant was purchased from the Girtanner Company. It consisted originally of an ash line from the rear of the furnaces, and soot lines from the back pass of the boilers and the base of the chimney to a twenty-ton capacity tile storage tank. Experience, however, proved that the ashes from the furnaces must be removed by hand and that they can best be moved out of the boiler room in a wheelbarrow.

With low ash coal, the furnace bottoms, depending on the load, need not be cleaned oftener than once a week. This time was extended to three weeks when burning petroleum coke breeze.

The maintenance cost of the furnace bottoms has been low; and the labor in removing the clinker reasonable. When the clinker is too hard for hand removal, an air-operated paving breaker is used for the purpose.

The chimney, a 250-ft. stack of concrete construction, was built by the Rust Engineering Company. It has a full height radial brick lining with a diameter of eight feet. It also has outside steps to the top, and is provided with a Rust nine-point lightning rod system. Its smoke flue was built by the D. M. Dillon Steam Boiler Works.

The entire installation has proved to be reliable. For ten years, the steam load has been carried on the two boilers with no stand-by boilers except for heating. The only tube failure, while operating, occurred fortunately at a time when it did not affect production; and this failure was due to external rather than internal conditions.

This operating record is the more remarkable considering an operating week of either five or six twenty-four-hour days. Likewise, one year, these two boilers were both in service for 304 week days, being out of service only on Sundays and holidays.

The usual procedure is to take the boilers off the line when the mill shuts down for the week end. Then the furnaces are cleaned, and inspections and repairs made, so that both boilers can be put on the line early Monday morning. This procedure would be impossible with stoker-fired boilers, which, had they been used, would have made it necessary to install a third unit.

The good operating record and efficiency of the boilers is due in no small part to adequate treatment of the boiler feedwater, 65 per cent of which is make up.

Previous to internal boiler feedwater treatment, a thin hard scale developed. This scale was difficult to remove with a turbo tube cleaner, and was of sufficient thickness to cause bags in the front row of tubes in the first bank. It was the practice then to drive small bags back in place and to renew tubes with large bags on week ends. This trouble was most serious while burning petroleum coke breeze because of its low volatile and consequent longer flame.

Present practice is to use a colloidal treatment, called "Ken-Coll", prepared by the Barclay Chemical Company of Boston. Barclay also submits two reports each week on the condition of the boiler water as determined by samples collected by its organization.

Close observation of the feedwater is necessary to accommodate the boiler treatment to changes in the river conditions that are quite rapid at times.

A good operating record also has been obtained with the Atritas. Internal failures ceased with the installation of magnetic separators, and the screens over the coal hoppers. Renewal parts cost 3.8 cents per gross ton; while operation requires an average of 19.4 kw-hr. per gross ton.

There have been dips in steam pressure from lack of coal in the furnaces; and the stoppage occurs in getting coal to or away from the pulverizers. The larry operates well in getting coal from the bunker to the hopper over the

pulverizers; but, with wet coal, constant attention is needed to get the coal from the hopper into the pulverizers. Likewise, the coal piping from the pulverizers to the burners is long and crooked, which accounts for occasional stoppages there. Direct coal piping along modern lines, however, would relieve this difficulty.

The conclusion was reached some years ago the coal feed could not be operated with hand control, if reasonable efficiency was expected. The operator at the time had little else to do than adjust the coal feed and air dampers, but his action on the coal feed usually followed the change in loads rather than at the same time. Consequently, small changes in load magnified the steam flow changes because of the change in pressure occurring at the same time. In other words, a slight increase in load on the engines caused a considerable increase in steam flow to them if there was a drop in pressure at the same time. This condition led the operators to think that the load was always changing and that there was nothing they could do about it.

The preparation and making of paper, however, must be carried on in the mill under steady conditions; and, while there may be load changes from hour to hour, these changes could not be occurring at all times and have satisfactory papermaking conditions. Once the boiler operators appreciated this fact, they gave their hearty co-operation in smoothing out the boiler pressure curve.

Following the installation of the automatic coal feed, considerable experimenting was done before the proper place was found to connect the regulator into the steam mains. Then the regulator on the boiler feed pump was overhauled because it had been found that the rate of feeding water to the boilers must closely follow the load if steady operating conditions are to be had. Also the Stets boiler feed regulators were changed so they would not completely close with the float in its highest position. This change helped to eliminate the load changing from one boiler to another.

After the steam pressure curve was smoothed out, it was found that the steam flow curves also were smoothed out, and that the variations in flow which appeared to come from the mill really originated in the boiler room. In Figure 4 are shown two Bailey meter charts that are illustrative of conditions before and after these changes were made.

With frequent and large swings in the steam flow, it was difficult to ever have proper furnace conditions.

It is apparent that changes in steam pressure will cause the speed of engines to vary, even without change in load, and variations in speed will cause changes in the steam demand. Likewise change in the steam demand requires a change in the coal feed, and that produces a change in the furnace temperature.

Considering the momentum of the engines, and the storage and liberation of heat in the furnaces, it is evident that the system may overrun from one extreme to the other, and produce considerable changes in steam flow. To the boiler operator, this situation appears like a load change in the mill and, therefore, beyond his control. Actually it is a change in the steam demand of a constant load supplied with varying steam pressure.

Some may question the emphasis upon maintaining constant steam pressure as affecting boiler operating economies. Burning coal in pulverized form, however, gives a sensitive method of generating steam, in fact, a method so sensitive that one may in the operation of but two boilers set up considerable variations in steam pressure which, in turn, will cause variations in steam flow. As long as such a condition is allowed, the resultant furnace conditions make it difficult to maintain good efficiency in burning the fuel.

Not much progress was made in efforts towards improving operating efficiency until it was possible to maintain fairly constant steam pressures, and thereby have coal feed and furnace conditions comparable with the load. In Figure 5 is shown both a steam pressure chart, which indicates how closely a 165 lb. per sq. in. boiler pressure can be maintained over a twenty-four-hour period, and a Venturi meter chart.

Some years ago, the operating crew devised and installed an ingenious arrangement whereby a meter with a twenty-four-hour chart gives a continuous record of gate openings of the Atrita coal feed. Charts from the meter are comparative rather than exact, since variation in moisture in the coal from day to day will change the gate openings for a given load, but at the same time they are instructive to the boiler operator.

Under conditions of constant load, for example, a change in the secondary air, the uptake damper, or both, is followed quickly by a change in coal feed. The operator has a chart of steam flow and air flow conditions from the Bailey meters, and the corresponding coal feed record shows how less coal is required as furnace conditions improve. He cannot fail

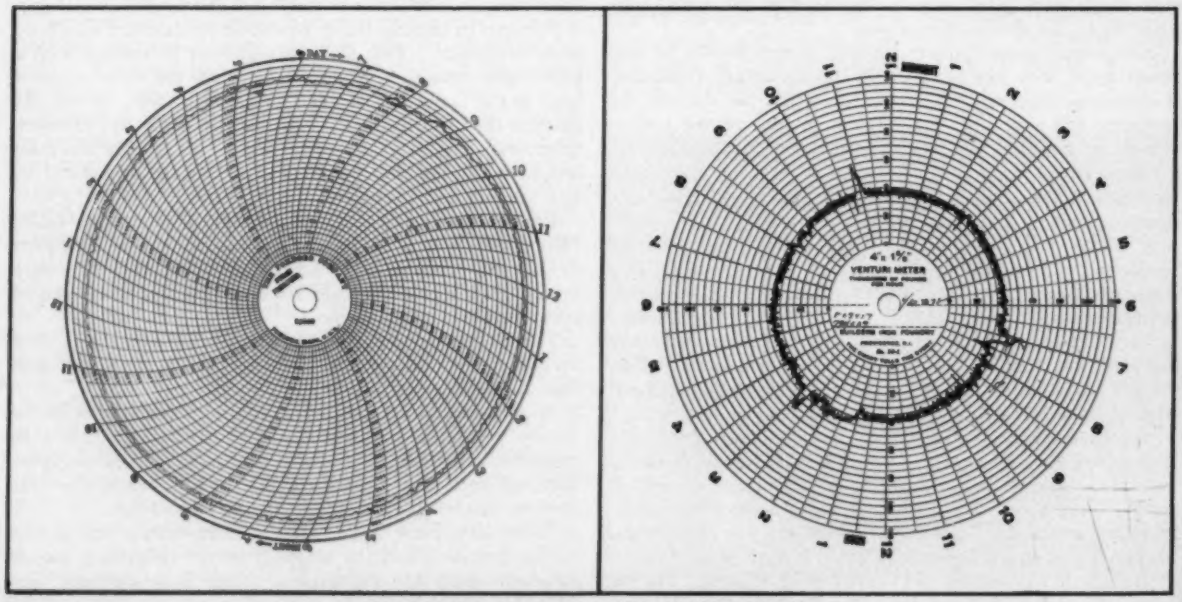


Figure 5—Steam pressure and Venturi Meter charts.

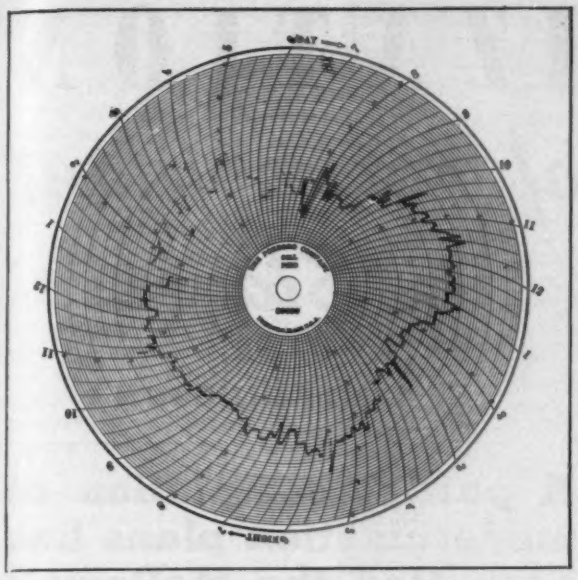


Figure 6—Coal feed meter chart.

to see the effect of reducing the excess air to the furnaces; and he is given a check on the evaporation as calculated from hour to hour, or over an 8-hour watch. The coal-feed meter also immediately shows any hunting of the regulating devices so that they may be adjusted. A chart of this meter is shown in Figure 6.

The investment for modernizing the boiler plant included the purchase of two Atritas; two boilers; settings; flues; 250-ft. chimney; complete coal and ash handling equipment; 150-ton coal bunker; coal larry with Richardson scale; ash storage tank; Cameron boiler feed pump; Venturi, Bailey and Ranerex meters; and the necessary coal, water and steam piping. In fact, everything was purchased except the building, and the feedwater heater; and, in doing so, extra expenditures were made on existing building foundations to bridge a flume under the front ends of the boilers.

An itemized monthly report on the cost of operating the boiler room is prepared by the accounting department of the mill. This report includes all direct expenditures and overhead. From it is obtained the monthly cost per 1000 lb. of steam for fuel alone, and the cost per 1000 lb. of steam including all expenses in the boiler room. Comparing an average of the last two years using the old equipment with an average of ten years using the new shows a reduction in steam costs of 34 per cent, and in fuel costs of 37 per cent.

It is fortunate that substantial savings in fuel costs were made during years of poor business with decreased steam output. Reductions in the price of coal helped to make these savings, and, for a considerable period, Mr. Hollingsworth bought petroleum coke breeze at an attractive price, considering its high heat content. This latter fuel was burned satisfactorily, and it contributed in no small way to lower fuel costs at a time of low production. The lowest monthly fuel cost was 19.3 cents per 1000 lb. of steam; the lowest average yearly fuel cost was 22.0 cents per 1000 lb. of steam. Both of these minimum costs occurred while burning petroleum coke breeze.

Such results in the burning of petroleum coke breeze in themselves justified Mr. Hollingsworth's earlier prediction that pulverizers increase the range of fuel that can be utilized. In burning this fuel satisfactorily, however, proper credit should be given the chief engineer and the boiler room operators. These men have always been a vital factor in the efficient operation of the boiler room, and their usual hearty co-operation made possible the utilization of a fuel that showed greater savings than coal.

In comparing the operating costs of the new boiler room equipment with the old, over a period of years, there are many factors affecting the results. Aside from the better operating efficiency of the new equipment, and decrease in labor and repairs, it is apparent there is an increase in overhead. These factors have been included in the percentage reductions in costs which were given previously. There is one other important factor, however, that affects such calculations and that is the *fuel cost per ton*. Fuel was relatively high in 1926-27, and at times during the following ten years it was over 25 per cent lower.

Since fuel is such a big factor in the cost of operating a boiler room, large changes in its price affect the apparent savings. In Figure 7 are shown average yearly steam costs per 1000 lb. and fuel costs per 1000 lb. of steam. The 1926-27 values represent average costs for the last two years of the old equipment; while the values from 1928 to 1937 inclusive are with the new equipment, but *corrected for the same coal price as the average of 1926-27*. These curves, therefore, represent costs before and after the installation of the new equipment *if the coal price had remained the same as the average of 1926-27*. On the basis of *corrected* coal price, the average decrease in steam cost per 1000 lb. was 25 per cent during the ten-year period as compared with the previous two-year period. In other words, the savings in ten years were 2.5 times the original investment.

It is interesting to compare the expected savings of the new boiler plant equipment with the actual calculated savings. In 1927, it was estimated that the new steam cost

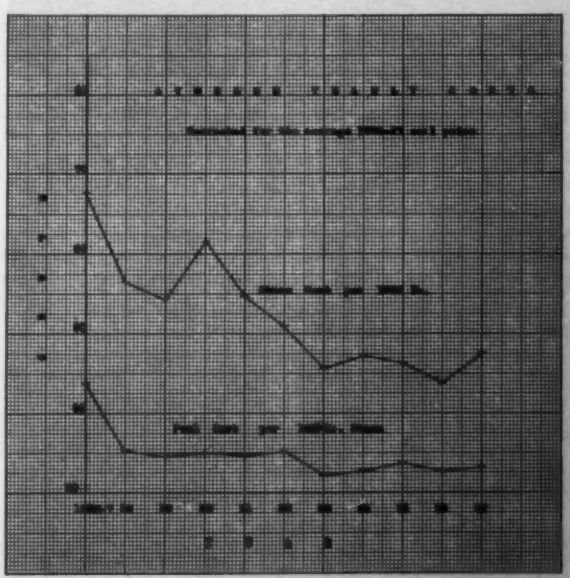


Figure 7

would be 56 cents per 1000 lb. After correcting for the change in coal price in the manner previously outlined, the average steam cost was 56.6 cents per 1000 lb. for the first year, while the corrected ten-year average was 50.9 cents per 1000 lb. Also, in 1927, it was estimated that the new equipment would give a certain yearly net saving. Again correcting for the change in coal price, the calculated saving was 2 per cent higher than estimated for the first year; while, over the ten-year period, it averaged 8 per cent higher than estimated. It is evident that the calculated savings were better than the estimated, over a period that included years of low production, because the corrected steam cost was substantially lower than was estimated.

MODERNIZATION *of Power Plant in Stages*

C. C. HARRINGTON

A partial completion of modernization plans has permitted the McDowell Paper Mills to reduce its power costs by $4.65 per ton of product.

Left—Exterior view of the addition to the boiler house, and the new steel stack at the McDowell Paper Mills.

SINCE 1825, the McDowell Paper Mills company, of Philadelphia, has been active in the manufacture of various grades of paper. At present, the principal products of this concern include high grade wrapping papers, imitation parchment, grease-proof papers and bleached and colored specialties of all kinds. During its years of operation, the power plant of this company has undergone many a change in order to keep abreast of the higher efficiencies and better performance offered by new equipment.

The latest power modernization followed a survey made by H. M. Wilson Company, engineers, to determine the savings that would result from an installation of up-to-date power equipment. This study revealed an estimated saving in power and steam costs of over $10 per ton of the manufactured paper, if a modern, high pressure power installation were substituted for the existing equipment.

The existing installation consisted of three 186-hp. h.r.t. boilers, and two 400-hp. straight-tube boilers, all operating at 175 lb. pressure. These units were coal fired, and the handling of coal and ashes presented a dust problem that was a constant source of worry in the mill. Electric power was provided by a 500 kw. turbine-generator. This machine is only a few years old, and it was planned to utilize this turbine in the new set-up.

The equipment in the mill includes two engine-driven paper machines. One of these is belt-driven from a 125-hp. reciprocating engine. The second machine and Jordan are driven through a Manila transmission rope by a 400-hp. twin reciprocating engine. The exhaust steam from these two engines is utilized for paper drying and feedwater heating.

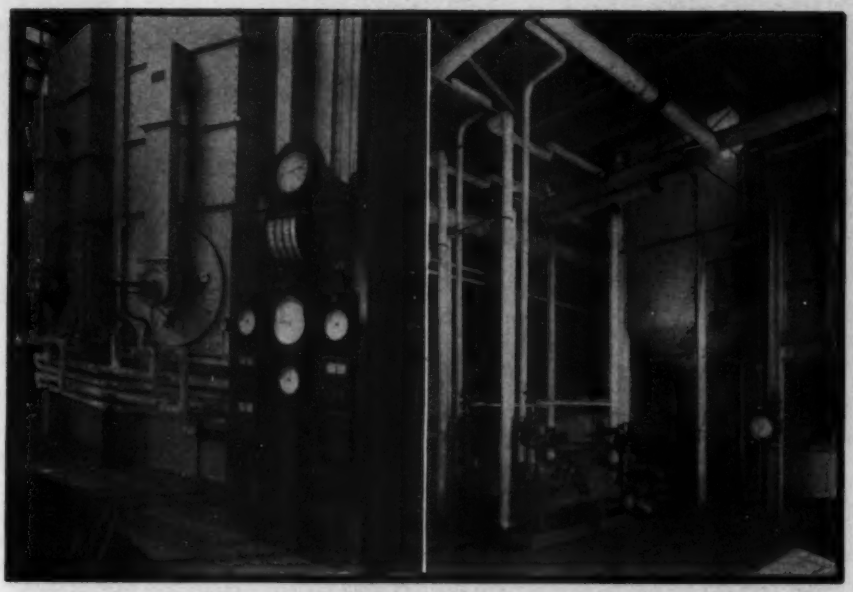
An additional source of power in the McDowell Mills is an old 400-hp. vertical water wheel which operates 24 hours a day to drive the beaters. As the plant is located between a canal and the Schuylkill River, with the canal 20 feet above the river level, this available water power is economically utilized by the plant. Incidentally, the only upkeep necessary for this old wheel, is replacing the wooden teeth on the horizontal bevel gear about once every three years. The beaters are individually belted to a heavy line shaft, which, in turn, is driven by the water wheel. The canal also forms a natural head for circulating water through the turbine condenser.

The modernization plan decided on by the engineers and the management, was to install a high pressure boiler, and a turbine-generator to "top" the present turbine. The new

The two 15,000 gallon oil tanks and pump house, securely anchored above ground because of the flood conditions of the adjacent river.

turbine, which it is planned to operate at 475 lb. throttle, will then exhaust at 175 lb. to the throttle of the old unit. This arrangement will give the mill sufficient electrical energy to permit changing some of the paper machine drives and other equipment to more flexible and economical electric motor drives.

The expense of such a complete change-over, however, was not practical at the time. Accordingly, it was decided to install the new steam generating equipment immediately, and to postpone the installation of a topping turbine until a later date. In this way, the mill could immediately profit from the higher efficiency of the new steam generating equipment, even though it was not yet practical to make a complete change in the power set-up.

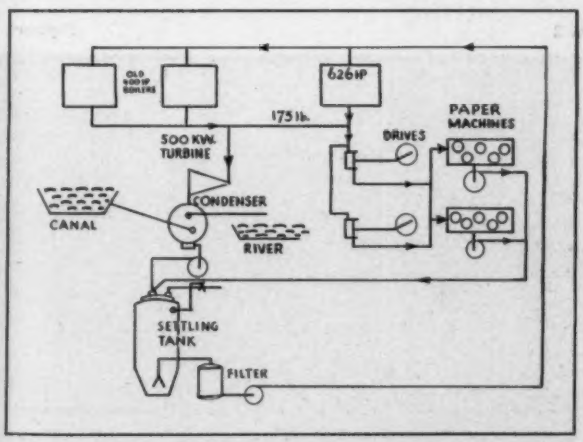


Left—The firing end of the 626-hp. boiler, and the instrument board. Right—The new feedwater pumps and feedwater treatment equipment.

To house the new boiler, which was considerably larger than any in the plant, a new steel-frame and brick boiler house was erected. The new boiler is a 626-hp. unit designed to operate at 475 lb. steam pressure, which is the pressure ultimately to be used with the topping turbine. At present, however, the boiler operates at 175 lb. gauge, to feed the old turbine and the paper machine engines.

The boiler is oil-fired, although the burner boxes are designed to accommodate pulverized coal if fuel prices later warrant a change. The furnace volume is 3085 cubic feet, sufficient to provide ample combustion space for continuous ratings of 45,000 lb. of steam per hour, at an over-all efficiency of better than 80 per cent. The side and front walls of the furnace are steel encased and air-cooled. The rear wall is water-cooled by the two lower rows of boiler tubes. The boiler is a straight tube design and provision has been made to install a superheater, economizer and an induced draft fan.

The three old 176-hp. boilers have been removed. The two 400-hp. units have been revamped and are used for standby service. By rearranging the baffles in these two boilers, excavating 4 feet below the old furnace floor to provide a larger furnace volume, and substituting oil burners for coal firing, the capacity of the two units has been increased 50 per cent. Hence the two units are capable of carrying the entire mill load continuously.



Steam distribution diagram.

Combustion is regulated by a master controller that is actuated by the steam pressure. This controller, in turn, regulates the air-flow through the vortex vanes of the fan, and the steam and air ports on the burners. A motor-driven forced draft fan is provided, capable of delivering 2300 c.f.m. With an eye towards future changes, the shaft on the fan is extended to permit the installation of a turbine drive, if desired. A new 150-foot, 76-inch, self-supporting steel stack has been erected to handle the combustion gases from both the new and old boilers.

To give a complete picture of boiler operation and economy, a set of indicating and recording instruments has been provided. These include a 2-pen pressure recorder showing the boiler pressure and the feedwater pressure; a feedwater temperature recorder; a CO_2 recorder; and a 5-point draft gauge. This latter instrument indicates the draft at windbox, furnace and uptake, and is provided with two units to indicate the draft through the economizer when this apparatus is added.

The space formerly occupied by the three 186-hp. boilers is now occupied by the new water treating equipment. Water for the boiler is obtained from the canal that passes one side of the mill. It is first settled and coagulated in a cold water basin, then passed through a soda and hot lime softener. The feedwater pump drives are governed so as to hold a constant pressure differential above the boiler pressure at an uniform feedwater temperature.

Although a blessing in many ways, the canal and river passing the mill have their drawbacks. The ground becomes so saturated with water during high water periods that it was necessary to install the oil storage tanks above the ground. Even then it was necessary to securely anchor the tanks to concrete foundations. A water-tight pump room was built between the two tanks. The two 15,000-gallon tanks are heavily insulated. During cold weather, both tanks and pipe lines are heated by steam. Fuel oil is delivered by tank car and pumped to the storage tanks. Two duplex steam driven fuel pumps deliver the oil through

suction and discharge strainers and a pre-heater to the two burners on the new boiler.

By making a partial installation of its anticipated change, the mill has been able to profit by cutting its power costs a considerable extent. Based on similar production, the operating costs for power and steam since the change to oil firing have been reduced about $4.65 per ton of product. This reduction is based on 3 cent oil compared to $5.32 coal, which is the prevailing price for the fuel formerly burned. With the future installation of the high pressure turbine for which the boiler is suitable, a further reduction of $5.75 is estimated.

The McDowell Paper Mills company is now owned and operated by Charles McDowell, grandson of the founder.

Variable Speed Drives

in Pulp and Paper Mills

D. E. LEWELLEN, Lewellen Manufacturing Company

MECHANICAL variable speed controls are recognized generally as one of the most important items of auxiliary equipment in a wide variety of manufacturing processes. Without them, it would be impossible, in many instances, to secure machine speeds best suited to individual operating conditions. With them, infinite speed control within the operating limits of an individual drive is possible.

One type of mechanical variable speed transmission unit consists of an arrangement of two parallel shafts, each carrying a pair of discs which form an adjustable diameter pulley, and a belt for transmitting power from one shaft to another. There also is a variable speed pulley unit which may be mounted directly on a motor shaft or on some other machine shaft.

The complete transmission unit has the advantage of the variable speed pulley in a wider range of speed. A speed range as great as 16 to 1 is possible with the complete transmission; whereas the variable speed pulley is limited to a speed range of about 3 to 1.

During recent years, a considerable number of paper mills, in order to decrease production costs, have utilized complete variable speed control units in arranging cutters and slitters so that sheets are slit and cut to length direct from the paper machine. Figure 1 illustrates an installation of this kind—a 138-in. cutter driven from the variable speed shaft of the paper machine. The installation makes use of two vertical type variable speed transmissions which make it possible for the cutter to reduce the sheet of paper as delivered to it from the machine to any sheet length from 20 to 80 inches and at any machine speed from 150 to 350 f.p.m. A particular advantage of this type of control is that when changing from one sheet length to another the transmission may be set to the desired sheet length, the graduated dials on the transmissions indicating the length of sheet being cut without the loss of test sheets. An accuracy within less than 1/16 in. in any sheet length is reported by the mill in which the above mentioned installation is made. Likewise, inasmuch as the transmissions are driven direct from the variable speed line shaft of the paper machine, paper machine speed can be adjusted without in any way interfering with the adjustment of the transmission or affecting the length of sheets being cut.

The driving arrangement, clutches, V-belt drives, etc., of similar installations are shown more clearly in Figures 2 and 3.

Figure 4 illustrates a variable speed pulley driving a paper cutter and slitter. The pulley is mounted directly on the motor shaft and drives to a grooved pulley on the cutter of the machine. Speeds are controlled with the handwheel

Figure 1 Figure 2 Figure 3

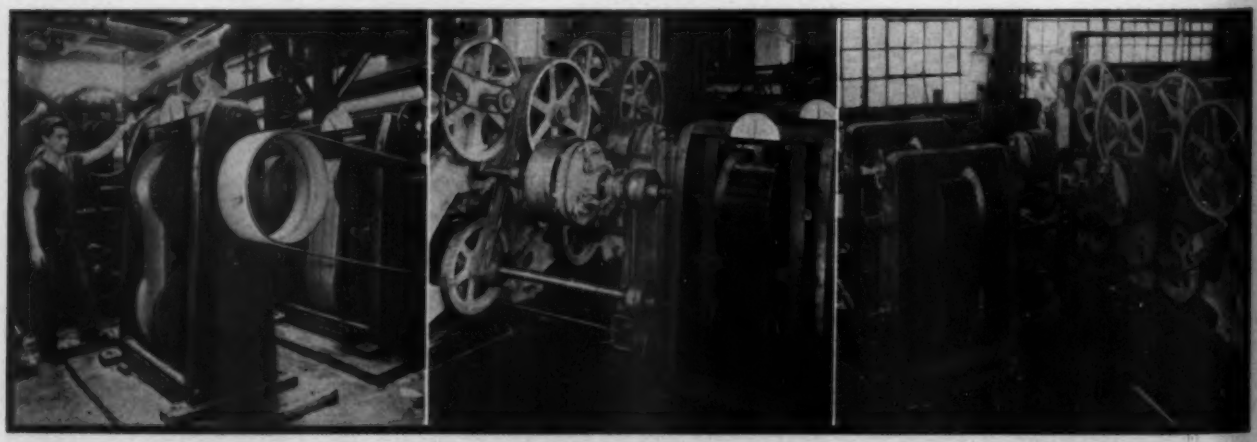


Figure 4

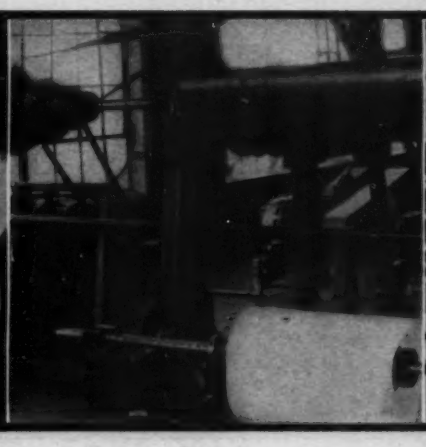


Figure 5

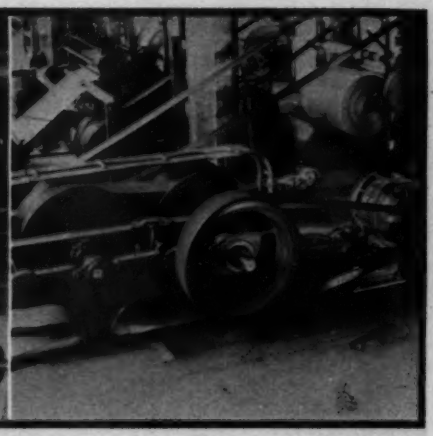


Figure 6

which moves the motor to position the belt at any diameter on the adjustable discs of the motor pulley. Both discs move exactly the same distance in opposite directions, so that the belt center remains fixed, that is, the belt does not travel sidewise. The entire mechanism of the pulley is enclosed, and is lubricated from one point.

Variable speed transmissions are practically a necessity on pasting machines. They permit change of speeds to compensate for stretch and shrinkage of the paper, due to variations in moisture content, to glue, to humidity of the room, etc. A typical installation of a variable speed transmission driving a complete pasting machine is shown in Figure 5. In this installation, three separate transmissions are used. One transmission drives the complete machine; while the other two drive the dryers and winder respectively.

On coating machines, the sheet is coated either with glue or other adhesives, or with fillers or coating materials to improve the finish and color of the paper. Figure 6 shows a drive on a coating machine that is used for putting a filler of glue on paper and cloth. This coating machine is 50 inches in width, and runs twenty-four hours a day, six days a week, at any speed between 105 and 525 f.p.m. The glue is applied on papers with basis weights (24x36—480) as light as 35 pounds and as heavy as 106 pounds. It is not possible to accurately control the moisture in the glue or paper, or the temperature of the dryers; but, with the infinitely variable speed control, it is possible to select a speed which compensates for any varying conditions of the different elements.

It is necessary to operate wallpaper printing machines at various speeds due to different grades of paper used, difference in drying time of different colored inks, etc. By using a variable speed pulley for such an application, it is possible to adjust the individual machine to its highest practical speed and to compensate for any variations in the other elements of the process. Figure 7 shows a wallpaper printing machine that is equipped with such a pulley, a flat faced pulley rather than a grooved one being used for the purpose.

Figure 8 shows a transmission used in conjunction with a paper slush mixer. The mill in which this installation is located found that a very materially improved product is made possible by controlling the speed of the mixer to compensate for various conditions and different stocks.

An installation of the mechanical type of variable speed transmission driving a sanding machine is shown in Figure 9; while Figure 10 shows an application on a car-loading conveyor.

These latter three illustrations reveal that modern mechanical variable speed transmissions operate satisfactorily under most unfavorable conditions. In the case of the application shown in Figure 8, the transmission is subject to moisture, stock splashing, etc. The transmission of the sanding machine (Figure 9) is practically covered with sand and grit; yet this transmission has been operating twenty-four hours a day for more than six years under these unfavorable conditions. The installation covered by Figure 10 is located outside the mill and, of course, is subject to all the varying weather conditions.

Figures 11 and 12 show respectively a vertical type transmission and a horizontal type transmission, each with me-

Figure 7

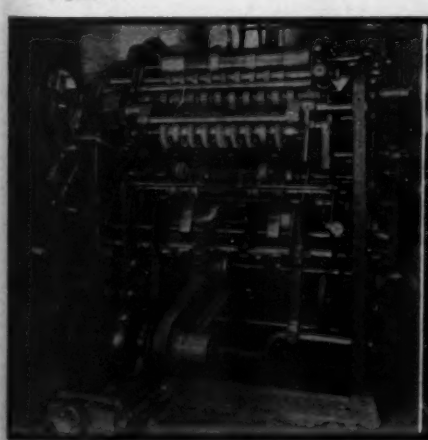


Figure 8

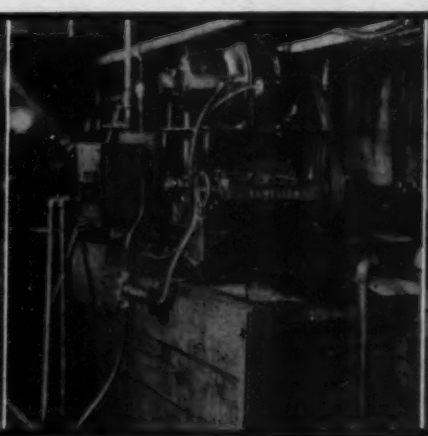


Figure 9

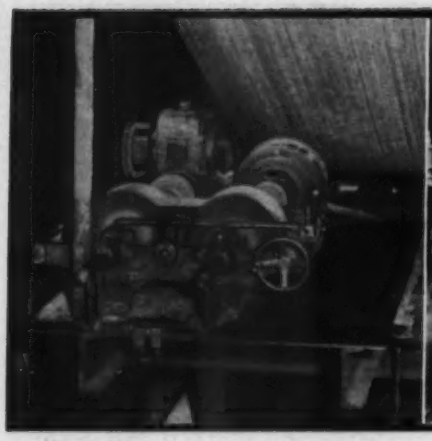


Figure 10

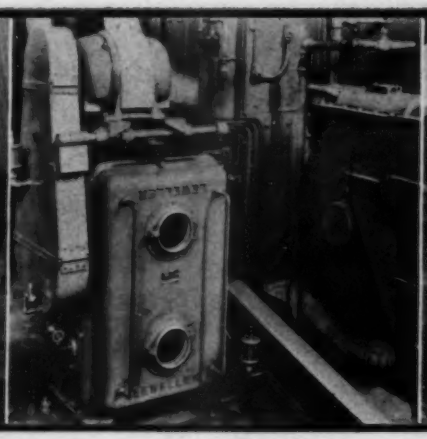


Figure 11

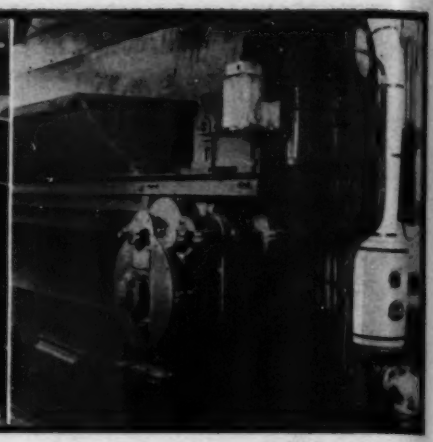


Figure 12

chanical control, driving from a constant speed motor to a chain grate stoker. The control lever of either transmission is operated from a hydraulic regulator which is sensitive to the boiler steam pressure. Any slight variations in steam pressure operate the control lever of the individual transmission by small increments and thus maintain an approximately uniform boiler pressure and take care of variations in the steam demands. In this way, a uniform steam pressure is maintained with no attention on the part of the foreman other than keeping the coal hoppers filled.

Figures 13 and 14 show two transmissions, a horizontal unit and a vertical unit respectively, connected to the governors of Corliss engines, and each equipped with electrical remote push button controls. These push button controls, when such an arrangement is used for driving a paper machine, permit machine tenders to control speeds from any number of stations along the front of a machine even though the engine driving it may be some distance away. One special feature of this type of installation is that a high gear ratio is used between the pilot motor and the control screw of the transmission to prevent too rapid change of machine speeds.

Another installation in which the transmission is mounted on a 2-cylinder automatic engine and drives a fly ball type of governor is shown in Figure 15. In this case, the engine, used for driving a paper machine, is located in the basement below the machine, the transmission being equipped with hand control, which through a sprocket and chain arrangement extending to the machine room floor above permits control of the machine speed.

The individual transmission in each of the three engine applications which have been cited is interposed between the crank shaft and the governor, and is used to change the speed ratio between the governor and the crank shaft. The governor, of course, is running at a practically constant speed.

Another similar application is that in which a transmission controls the governor of a steam turbine.

The simplest as well as the most trouble-free application involves the use of an induction squirrel cage constant speed type of motor with a mechanical variable speed transmission. This combination practically eliminates all possibility of motor trouble and provides an infinitely variable speed.

Such transmissions as have been illustrated are made in sizes from ¼ to 60 hp., and larger and in a wide range of designs. They are furnished in either horizontal or vertical types—open or completely enclosed; with stainless steel shafts for particularly moist conditions; and with bearing mountings designed to exclude dirt, abrasives, etc., and equipped with high pressure seals to retain the lubricant under all conditions.

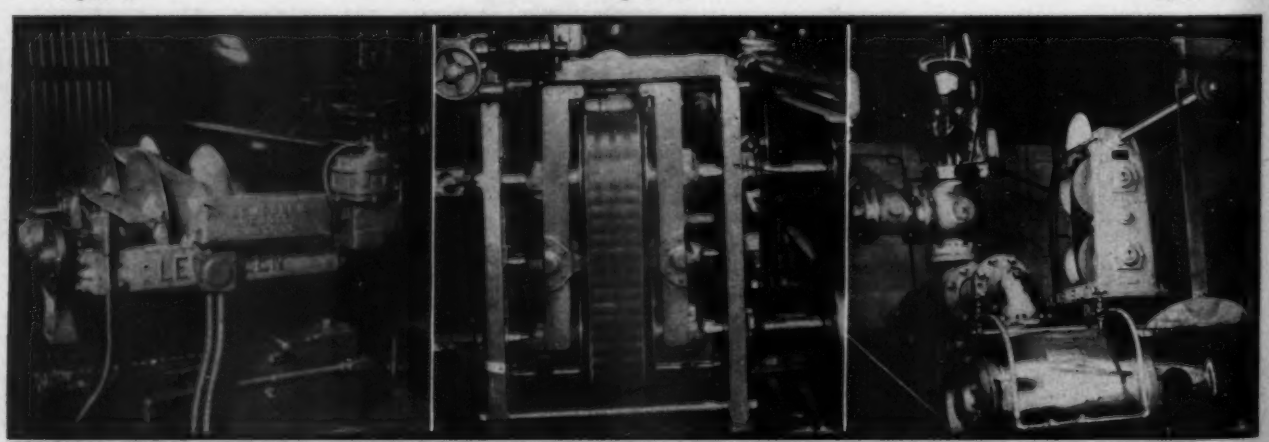
It, therefore, is advisable, in selecting a transmission for any service to consult the engineering department of the manufacturer. By so doing, a size and type may be selected which is best suited to practically any local conditions.

Variable speed transmission of itself does not change the conditions of the manufacturing process. It, however, increases production and improves the product by making possible the selection of a speed best suited to the varying operating conditions, a speed which compensates for conditions which otherwise cannot be controlled.

Figure 13

Figure 14

Figure 15



PAPER SKETCHES

IN THEIR GREED TO GET EXORBITANT PRICES FOR THE RAGS THEY SOLD, EUROPEAN RAG DEALERS OF THE 15TH CENTURY SUCCEEDED ONLY IN RETARDING THE PROGRESS OF THE INFANT PAPER MAKING INDUSTRY. NEEDLESS TO SAY, THE GUILDS OF PARCHMENT MAKERS DID EVERYTHING IN THEIR POWER TO DISCOURAGE PAPER MAKING.
RECENT REPORTS INDICATE THAT 850,000 PAPER MILK PACKAGES ARE SOLD AT RETAIL, EACH DAY, IN NEW YORK CITY
PAPER WATCHES WITH PAPER MOVEMENTS WERE MADE IN THE 1890's BY A GERMAN CRAFTSMAN.
TELEGRAPH POLES, MADE OF PAPER PULP MIXED WITH SMALL QUANTITIES OF BORAX, TALLOW AND OTHER INGREDIENTS, WERE BEING MANUFACTURED AND USED AS EARLY AS 1896. THESE POLES WERE MADE HOLLOW.

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FINISH
Uniformity
DESIGN
Dependability
APPLETON WOOLEN MILLS . APPLETON, WIS.

Safety's Silver Anniversary

BEFORE the World War, the automobile was not in as common use as it is now; therefore, the problem of traffic safety was not what it is today. However, the increasing toll of industrial accidents was alarming executives of both large and small businesses. Some companies had installed safety work designed to meet their particular problems, but there was dire need for organization and special study on this subject—one of the greatest problems then confronting the nation.

During a convention of iron and steel engineers in Milwaukee in 1912, a group held what was termed the "First Co-operative Safety Congress." At this session, a committee was appointed to consider plans for a permanent safety organization and to arrange future meetings. Thus was born the movement from which grew the organization of the National Safety Council on September 24, 1913, at the McAlpin Hotel in New York City. Three weeks after its organization, the Council opened small and unpretentious headquarters in Chicago.

That was only twenty-five years ago, and this year, during the week of October 10, the National Safety Council celebrated its Silver Jubilee in Chicago at the Stevens Hotel with the largest registration recorded at any annual meeting since its organization. Records showed that 9250 delegates were in attendance and the various divisions reported large attendances; the programs exhibited earnest preparation, and the interest throughout the Congress was unparalleled.

The celebration was not one to be taken lightly nor was it staged in the spirit of "just marking off a quarter of a century," but statistics presented at all sessions proved that the cause of organized safety brings heavy returns. In twenty-five years, the Council points to a saving of 285,000 lives. *Safety does pay.*

Annual Meeting

Well-attended by members from all industries, the annual meeting on Monday morning, October 10, set the theme for the entire convention. At this opening session, held in the grand ballroom of the Stevens Hotel, the delegates were addressed by prominent leaders of safety work who urged those in attendance to ever further the cause of safety and to bend every effort to prevent accidents.

▸ D. D. Fennell, president of the National Safety Council, who presided over the initial meeting, spoke on "Twenty-Five Years of Safety." Mr. Fennell presented some of the history of the Council, showing the progress made by the organization, stressing the fact that the Council would strive to attain even greater achievements in the future.

"Membership in the Council entails upon the individual the obligation of service," Mr. Fennell said. "Among the pioneers the eagerness to save lives burned with a steady flame and that enthusiasm for a personal part in safety work has been handed down to all members through the years. Regardless of the economic urge, which is a well-considered part of accident prevention work, it is, nevertheless, because human lives are involved and can be saved that most men spend their energies unstintedly in organized safety efforts."

Speaking of the future, Mr. Fennell prophesied: "If I were to make just one prediction regarding the course of the movement in years to come, I should say that increasing emphasis will be put upon scientific methods and upon the training of individuals to carry out their accident prevention work along scientific lines. Research will be concomitant of progress."

▸ Charles R. Hook, president of the American Rolling Mills Company and president of the National Association of Manufacturers, spoke on "Industrial Safety—Its Relation to The Business of Today."

First recalling his early friendships formed within the National Safety Council, Mr. Hook then traced the development of the safety movement, pointing out the contempt that once prevailed among workers for safety and safe practices.

"Today," said Mr. Hook, "the men in most steel plants are safer than they are on the streets of their home community. It would be economically impossible to operate a modern steel plant today with the greatly increased use of machinery and power if the men had the same disregard for their own safety as existed in those days.

"There are two fundamental arguments for accident prevention. The first is the moral obligation every management owes to the employees and their families of reducing to an absolute minimum the human suffering caused by industrial accidents.

"The second argument is economic. In this competitive age, with every company fighting to reduce costs and hold its customers, the dollar side of safety cannot be overlooked."

It is important, Mr. Hook brought out, that the safety message be carried persistently in terms that are specific, easily understood by the men and

Chas. R. Hook, president American Rolling Mill Company, addressed the annual meeting of members which opened the Twenty-fifth Annual Congress of the National Safety Council. Seated on the platform with Mr. Hook are shown: W. H. Cameron, managing director of the National Safety Council (left) and D. D. Fennell, president of the Council (right).

which show the men that it is to their best interest to do things the safe way. In illustrating this point, Mr. Hook cited an example in which a sign reading "Don't Wear Gloves When Operating This Machine" was changed to read "Save Your Hands and Protect Your Family Income by Removing Your Gloves When Operating This Machine."

"The first sign," Mr. Hook explained "represented an order. The second presented a logical reason why and a personal benefit to be derived. Such measures as these, combined with other safety measures, cut accidents 50 per cent in this plant in eight months."

Mr. Hook brought out further that both employees and employers realize the value of safety work and that less accidents mean better production. He stressed the fact that industry needs scientifically trained employees and that co-operative effort was very essential to encourage safety.

"Our board of directors," Mr. Hook remarked, "regards our accident report as an important barometer of organization effectiveness."

Unfortunately, Wallace B. Phillips of the British Safety Association was detained in England and could not attend the Safety Congress. His paper, however, was presented by W. H. Cameron, managing director of the Council.

In his paper, Mr. Phillips brought out that safety ideas were becoming universal and that there should be united effort in world-wide safety. He stated that the King of England, George VI, was interested in safety work to a large degree, as were many governmental officials. He also mentioned the many drives and awards made in Great Britain for safety work. Mr. Phillips suggested standardization of road signs and uniform traffic regulations the world over.

The next and last speaker on the

F. A. Robinson who was elected Chairman of the Paper and Pulp Section.

general program was William C. Knoelk, chairman of the Milwaukee Safety Commission, Milwaukee, Wisconsin. Mr. Knoelk's paper was entitled, "The Forty Thousand."

Mr. Knoelk stressed the fact that the statement "progress is automatic" is a false one and that there must be some stimulation. Science may be cruel, he brought out, pointing out that autos are a menace as well as a luxury. Human nature is not adjusted to scientific changes and mass production is far ahead of human traits, he said. He further elaborated on the fact that the lag between human behavior and mechanical progress is great. Individual action, Mr. Knoelk pointed out, is desired if safety work is to progress adequately.

After Mr. Knoelk had concluded his talk, Mr. Fennell adjourned the meeting. The bulk of the activities from then on were carried on by individual section meetings.

PAPER AND PULP SECTION

With over 125 members in attendance, the first session of the Paper and Pulp Section was opened with an address by the General Chairman of the Section, George J. Adams.

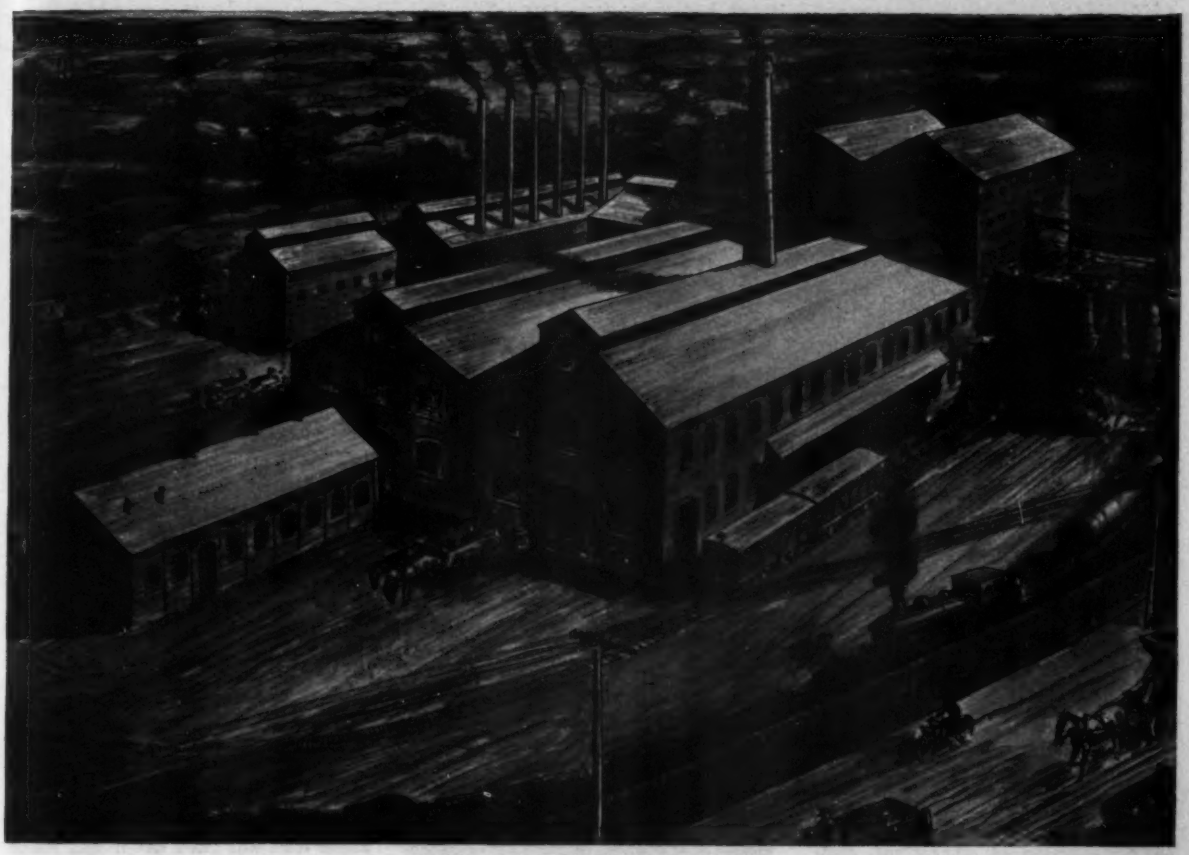
Mr. Adams began his address by expressing his personal appreciation to the officers and committee chairman for their co-operation during the past year and deploring the loss of Jim Turner, former chairman of the Poster Committee and safety director of the Consolidated Paper Corporation, Grandmere, Quebec, who passed away this year.

Mr. Adams then summarized the goals aimed at by the executive committee. "Our endeavor," he said, "has been to build up interest throughout the industry—to invite constructive criticism and to enable the Section to be of greater service—and to encourage participation in the solution of safety problems of vital interest to all of us."

Mr. Adams then touched on the subject of membership. "There was a net loss of six members in the Paper and Pulp Section during the last twelve months," he reported. "A year ago our section had 223 members. During the year, 19 new members were added but, unfortunately, 25 members cancelled their membership. As nearly as we could determine, these cancellations were all due to economy measures in the companies concerned."

Mr. Adams then brought out the importance of the relationship between the success of the Section as an accident prevention organization and the number of companies in the industry it represents. "There is, then, a large field in the paper industry to which our Section has not yet been of any appreciable service," Mr. Adams stated, "and further, from which we have not had the benefit of experience. The whole foundation on which we hope

A. B. Hansen delivered an impressive address at the opening session of the Paper and Pulp Section. Seated at Mr. Hansen's left are: George J. Adams, general chairman of the Section, and F. H. Robinson, chairman of the Program Committee and newly elected general chairman for next year. The illustration at the right shows a part of the assembly room during the opening session on Monday afternoon.



VIEW OF ORIGINAL PLANT IN 1900

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HERE in 1900 began production of COLUMBIA Soda Ash. Quickly the plant grew. In 1901 COLUMBIA Caustic Soda was first produced. Important by-products further contributed to rapid growth. In 1936 came the first production of COLUMBIA Liquid Chlorine. The same year saw the development of COLUMBIA Sodium Bicarbonate. Other Alkali and Chemical Products are supplementing this line as fast as man's inventive genius discovers better ways to fill man's ever-increasing needs.

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to properly function is an interchange of information based on experience for the good of all."

A letter from W. J. Brennan, who was unable to attend the meetings due to illness, was read by James J. Plzak of the Consolidated Water Power and Paper Company. Mr. Brennan, who is connected with the Associated Industries of Maine, regretted his inability to attend the meetings, and in his letter, he introduced a new member, E. A. Doran, general safety director of the Eastern Manufacturing Company, Bangor, Maine.

Three papers were presented during the afternoon session. These were: "Safety—an Operating Problem," by A. B. Hansen, executive vice president and general manager, Northern Paper Mills, Green Bay, Wisconsin; "Psychology of Dealing with Employees," by Dr. H. S. Hulbert, consulting psychiatrist, Chicago, and "Safe Practices in Handling Pulpwood—Mill Yards, Boats and Railway Cars," by Leon Shaffrey, yard superintendent, Bowater's Newfoundland Pulp and Paper Mills Company, Ltd., Corner-brook, Newfoundland.

Officers Nominated

Following the reading of papers and the ensuing discussions, A. Scott Dowd, chairman of the Nominating Committee, presented the committee's report on the selection of officers and committees for the following year. Officers nominated were:

General Chairman—F. A. Robinson, Kimberly-Clark Corporation, Neenah, Wisconsin.

Vice Chairman in Charge of Membership—D. B. Chant, The Ontario Pulp and Paper Makers Safety Association, Toronto, Canada.

Secretary and Program Committee Chairman—Clayton Braatz, Marathon Paper Mills Company, Rothschild, Wisconsin.

News Letter Editor—L. R. Simpson, The Brown Paper Mill Company, Inc., West Monroe, La.

Chairmen for the various committees were proposed as follows:

Publicity—E. W. Patton, Lawrence Paper Company, Lawrence, Kansas.

Engineering-Safe Practice — Arthur Murray, Container Corporation of America, Chicago.

Safety Instruction Card — Ernest Augustus, The Mead Corporation, Chillicothe, Ohio.

Data Sheet—R. G. McGivney, Oswego Falls Corporation, Fulton, N. Y.

Visual Education—D. T. Meany, New Brunswick International Paper Company, Dalhousie, N. B.

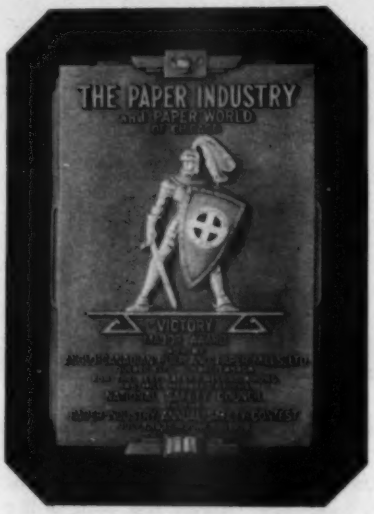
Contest — A. Scott Dowd, THE PAPER INDUSTRY AND PAPER WORLD magazine, Chicago.

Statistics—Fred W. Braun, Employers Mutuals, Wausau, Wisconsin.

Health—Dr. Louis H. Frechtling, Champion Paper & Fibre Company, Hamilton, Ohio.

As there were no further nominations all officers, chairmen and committee members were duly elected to office by a unanimous vote.

▸ Before papers of the second day's session were presented, Chairman Adams introduced Julius Draper, now safety director of the Consolidated Paper Corporation, Ltd., Quebec. Mr. Draper addressed the members briefly, eulogizing the late Jim Turner, former chairman of the Poster Committee.



For the best record among 145 mills enrolled in The Paper Industry Safety Contest, this trophy was awarded to the Anglo-Canadian Pulp and Paper Mills, Ltd., Quebec, by Edward B. Fritz, publisher of "The Paper Industry and Paper World."

Four papers were presented at this session at the conclusion of which there was conducted an open forum for new comers and old timers.

Papers and their authors included: "Designing Paper Mill Machinery for Production and Safety," M. W. Dundore, production manager, Beloit Iron Works, Beloit, Wis.; "Eliminating Hazards in Box Board Conversion," G. J. Bienvenu, superintendent, Gaylord Container Corporation, Bogalusa, La.; "Control of Plant Conditions Bearing on the Health of Paper Mill Employees," Colonel Thomas Dobbins, medical and safety director, Servel, Inc., Evansville, Ind., and "The Value of Accident Statistics, Including a Review of 1937-38 Experience," F. W. Braun, vice-president and chief engineer, Employers Mutuals, Wausau, Wisconsin.

▸ The open forum discussion was based on several questions which had been sent to the Paper and Pulp Section by members. Vice-Chairman Arthur E. Winslow was in charge of the discussion.

The first point raised had to do with the hazards of the use of felt or rope to stop rolls from slipping on the shaft. One member stated that his plant used a safety collar on the shafts, starting the shafts off with a common collar and then either using an 8-inch or a 10-inch collar on top. Another member corroborated this and elaborated on how this was accomplished. The latter brought out that as soon as the roll being wound reached a diameter greater than that of the collar, a wooden collar was put around the shaft without stopping the winding. There was, he said, a strip between the end of the core and the permanent collar on the shaft. A threaded sleeve was there and also a ring nut, which rode freely on the shaft. The split collar was put around the shaft and the nut was held by hand until the rotation of the shaft brought it in against the collar and against the end of the roll.

Another question was then brought up with reference to protection on calender stacks to prevent employees from getting their fingers pinched between rolls. The use of the V-shaped angle iron was cited but it was stated that the angle iron wadded the paper and that the workmen did not like to use it. One member suggested that the best way to guard calender stacks was to make walkways sufficient and have the doctor blades properly made with good supports at each end. It was also suggested to have the heating pads well anchored so that they cannot possibly get into trouble.

The next question asked what could be done to prevent paper machine hands from getting out when wiping doctor blades. One member said this problem was one of those things which involves care and caution on the part of the man. This statement was corroborated. The men must be careful, it was stated.

Safe handling of sulphuric acid was the next subject. One representative stated that the safest way to carry this chemical is in a carboy and not in one-gallon lots. Another method suggested was that one could take an ordinary gallon earthenware jug, make a box for it and fill the latter with plastic or wet pulp so that if the jug were dropped it would not break.

An interesting question was raised concerning methods used in determining status (occupational or non-occupational) of back disabilities. One mem-

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ber brought out that he had known several cases of this type and that it was extremely difficult to find out how the injury occurred. Back injuries should be X-rayed it was stated. Some backaches come from infected tonsils, etc. Some troubles can be traced to previous conditions of health.

The question of lime burns was discussed at length. It was pointed out that some men are allergic to lime and that others are not. It was stated that perhaps it was just a question of fitting a man to the job.

LUNCHEON MEETING

The luncheon meeting is always one of the high spots of the Paper and Pulp sessions. One point of great interest is at this meeting the National Safety Council presents trophies and certificates to the winning mills in each group of the Contest. But there is always suspense in the air during these meetings, for although the group winners are known before the Council convenes, each winning mill wonders which will be the lucky recipient of The Paper Industry major award given each year by Edward B. Fritz, publisher of THE PAPER INDUSTRY AND PAPER WORLD, to the group winner making the most outstanding safety record for the year.

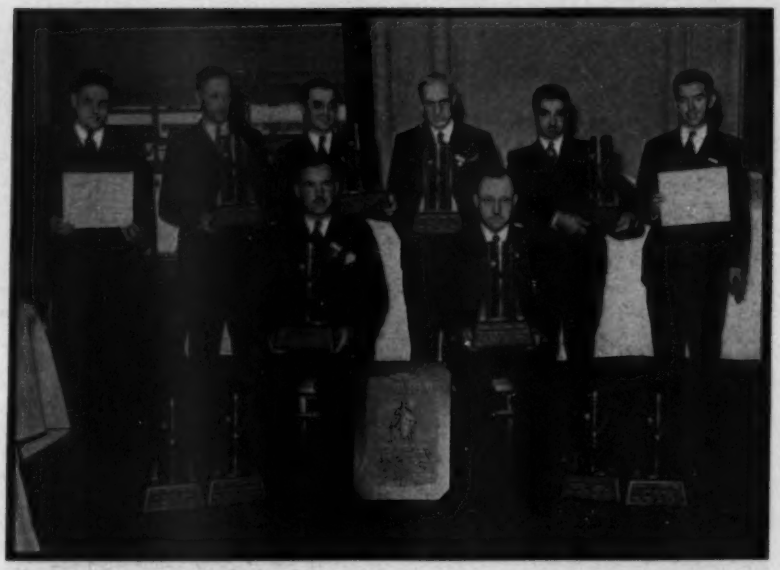
The luncheon on Thursday noon was well attended. The dining room of the hotel where this session met was unusually attractive and it seemed that the management of the hotel had exerted every effort to give to each section accommodations and service that far exceeded even the splendid reception of former years.

At the speakers' table were: George J. Adams, general chairman; F. A. Robinson, incoming chairman; Edward B. Fritz, publisher of THE PAPER INDUSTRY AND PAPER WORLD; A. Scott Dowd, chairman of the Contest Committee; Arthur H. Winslow, vice chairman, and C. W. Dempsey, vice president of the National Safety Council, who awarded the group trophies for the Council.

As soon as the luncheon was over, Chairman Adams introduced A. Scott Dowd, Chairman of the Contest Committee. Mr. Dowd submitted his report, "Data on the 1937-1938 Paper Industry Contest" and read the names of the group winners in the contest which closed June 30, 1938.

Contest Data

In the twelve-month contest, ended June 30, 1938, the average frequency rate was 13.713, a decrease of 16 per cent from that of the previous year.



Representatives of winning mills who attended the Congress and received their awards: Top row (left to right): John A. Moore, Patterson Parchment Company; E. R. Klasell, Escanaba Paper Company; Ernest Augustus, The Mead Corporation; T. G. Henderson, Erich Gach and B. D. Rogers, Bird and Son. Seated: T. M. Barry, Fraser Companies (left), and E. N. Baronet, Anglo-Canadian Pulp and Paper Mills, Ltd.

One hundred and forty-five manufacturing units entered the 1937-38 contest, and 135 of these qualified and remained to receive their final rankings. This exceeded the number of participants in any of the section's previous contests. The total working time of the 53,622 employees was 116,896,797 man-hours.

Division One, consisting of 116 paper and pulp mill units, made an average accident frequency rate of 13.815. Division Two, containing 19 remanufacturing plants, averaged 12.374. Paper and pulp mill contesting units improved their average record of the previous year by 18 per cent. Remanufacturing plants, on the other hand, increased their average rate of the year previous by 36 per cent.

Comparing the late contest rates with those of all which reported in the paper and pulp industry to the National Safety Council for the calendar year 1937, we find a much lower rate for those engaged in the contest. The entire industry averaged 18.45 for frequency during 1937, which is up 6 per cent from 1936, and ranked twenty-second in a list of thirty important industries; while as before stated, a decrease of 16 per cent was recorded in the late contest from that made in the previous year's competition.

Comparing the groups in Division One, we note that the frequency rates in paper and pulp mills increase as the units decrease in size; except that the rates of smallest mills (Group D) are a little lower than Group C mills. The largest mills (Group A) averaged 12.219; Group B averaged 13.624; Group C averaged 20.330, and Group D averaged 17.994. This relativity has been nearly consistent for the past four years.

One out of 33 employees sustained a disabling injury during the last contest year. *Perfect records* for the period of the contest were made by seven contestants. The most outstanding no-injury record was made by the Chicago plant of Bird & Son, Inc.—309,688 injury free man-hours.

Another Bird & Son mill at Phillipsdale, R. I., has operated a total of 1,270,010 man-hours since the last lost-time accident which occurred on March 1, 1934. This is a period of four years and four months, a total of 1,582 calendar days, to June 30, 1938.

Referring again to the fact that individual mills have shown great improvement in their accident records over the past four years, it might be interesting to say that all three top ranking mills in each group made large reductions in their frequency rates from those in previous contests. The most consistent decrease was made by the East Walpole mill of Bird & Son, whose frequency rate in 1935 was 11.386; the next year, 7.147; next year, 6.970, and in the last contest, 3.05.

The Nashville, Tennessee, Division of the Mead Corporation had a frequency rate of 46.837 in 1935; the next year this was cut to 25.082; and in the last two contests, the mill has had no lost-time accidents.

In Division II, the Bemis Brothers Bag Company, East Pepperell, Mass.,

MEDART-TIMKEN Pillow Block

TIMKEN BEARING EQUIPPED

A symbol of quality for any piece of equipment with which it is associated

TIMKEN Bearings are used on all locomotives and many of the cars of the new 20TH CENTURY LIMITED

In spite of the high average efficiency of modern paper mills there are still many opportunities for improving power application. Thus, obsolete power transmission equipment may be burning up power under the very nose of the operator. It may be using overdoses of lubricant and permitting shafts to misalign. Where these conditions exist install a Timken Bearing Equipped pillow block and you will immediately notice reductions in lubrication and power requirements. After years of service further economies are felt, for TIMKEN Bearings prevent wear and hold shafts in constant alignment. The precision of TIMKEN Bearings and their ability to carry loads coming from all directions assure smooth power transmission at all times. To get maximum performance at minimum cost—arrived at after years of service—buy "Timken Bearing Equipped".

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

Manufacturers of TIMKEN Tapered Roller Bearings for automobiles, motor trucks, railroad cars and locomotives and all kinds of industrial machinery; TIMKEN Alloy Steels and Carbon and Alloy Seamless Tubing; TIMKEN Rock Bits; and TIMKEN Fuel Injection Equipment.

TIMKEN
TAPERED ROLLER BEARINGS

has had no lost-time accidents during the past four years.

The rest of the records show that where in one particular year the number of accidents increased, this was subsequently improved very sharply.

For example, the Anglo-Canadian Pulp & Paper Mills, Ltd., Quebec, dropped from 6.486 last year to 1.259 in 1938.

The Container Corporation of America (Philadelphia) dropped from 10.163 last year to 1.833 this year.

Fraser Companies, Ltd., Madawaska, Maine, dropped from 10.430 last year to 1.882 this year.

Finch, Pruyn Co., Glens Falls, N. Y., had a bad upswing last year to 16.439, but reduced sharply to 5.458.

Likewise, the Hollingsworth & Whitney Co., Gardner, Maine, mill dropped from 16.119 last year to a perfect score this year, which they also had in 1936.

Enrolled in the 1938-39 Contest are 133 paper and pulp mill units and 30 remanufacturing plants—a total of 163 units. Sixty-eight units had perfect records for the first two months.

The only change that has been made in the Contest Rules is in Paragraph Two of Rule 2, Division I.

This change now reads:

"All operations included in the mill payroll *must* be included in this contest *except* as noted below:

(a) All marine transportation.

(b) Logging, lumbering, reforestation, railroad transportation, and similar operations *remote from the mill yard.*"

Contest Winners

DIVISION ONE

Group A

Rank 1 (Trophy)—Anglo-Canadian Pulp & Paper Mills, Ltd., Quebec, Canada.

Rank 2 (Certificate)—Container Corporation of America, Philadelphia, Pa.

Rank 3 (Certificate)—Bird & Son, Inc., East Walpole, Mass.

Group B

Rank 1 (Trophy)—Fraser Companies, Ltd., Madawaska, Maine.

Rank 2 (Certificate)—Flintkote Co. (Pioneer Div.), Los Angeles, Calif.

Rank 3 (Certificate)—Paterson Parchment Paper Company, Bristol, Pa.

Group C

Rank 1 (Trophy)—Escanaba Paper Company, Escanaba, Michigan.

Rank 2 (Certificate)—Finch, Pruyn & Co., Inc., Glens Falls, N. Y.

Rank 3 (Certificate) — Consolidated Water Power & Paper Co., Appleton, Wis.

Group D

Rank 1 Perfect Score (Trophy)—Bird & Son, Inc., Phillipsdale, R. I.

Rank 1 Perfect Score (Trophy)—Hollingsworth & Whitney Co., Aroostook & Cobbossee Mills, Gardner, Maine.

Rank 1 Perfect Score (Trophy)—The Mead Corporation, Nashville, Tenn.

DIVISION TWO

(Re-Manufacturing Group)

Rank 1 Perfect Score (Trophy)—Bird & Son, Inc., Chicago, Ill.

Rank 1 Perfect Score (Trophy)—Gaylord Container Corp., Dallas, Texas.

Rank 1 Perfect Score (Trophy)—Bemis Brothers Bag Co., East Pepperell, Mass.

Rank 1 Perfect Score (Trophy)—Bay West Paper Company, Green Bay, Wisconsin.

Edward B. Fritz, publisher of "The Paper Industry and Paper World," presents the major trophy each year to the group winner voted by the judges to have the most outstanding safety record during the contest. This year's award was given to the Anglo-Canadian Pulp and Paper Mills, Ltd., Quebec. Mr. Fritz (at left) presents plaque to E. N. Baronet, representative of the Anglo-Canadian Company.

Trophies Presented

Following Mr. Dowd's report, C. W. Dempsey was introduced. He outlined in a most impressive manner the feeling of the Council's executives for the splendid work that has been done by the mills in the Paper and Pulp Section and the record they have made during the past year. Mr. Dempsey asked representatives of the winning mills who were present to come to the front and receive their trophies. These awards were unusually striking this year. A bronze statuette was mounted in front of a half cylindrical piece of bronze which in a strong light had the effect of a stage drop. Across the front was a plate bearing the company's name and inscription of contest record. The design was modernistic and very effective.

After the group trophies had been accepted and admired, the big moment of the session arrived. Chairman Adams rose and in a fitting and gracious manner introduced Edward B. Fritz, publisher of THE PAPER INDUSTRY AND PAPER WORLD. For fourteen consecutive years Mr. Fritz has awarded a major trophy to the mill which has been voted by a board of judges to have the most outstanding safety record among group winners in the contest.

LUNKENHEIMER Fig. 1640 "KING-CLIP"

1 inch
Fig. 1640
I. B. B. M.

A sturdy general purpose gate valve with many distinctive features, original with Lunkenheimer, which mean extra valve service.

Available in a variety of patterns —inside screw, outside screw and quick operating; bronze mounted and all-iron.

If you have no copy of List Price Schedule R1 giving new list prices of Lunkenheimer products, ask your local Lunkenheimer distributor or write The Lunkenheimer Co., Cincinnati, Ohio.

ESTABLISHED 1862
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"QUALITY"
CINCINNATI, OHIO, U. S. A.
NEW YORK CHICAGO
BOSTON PHILADELPHIA
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Mr. Fritz reviewed the progress that has been made in the paper mills since they have become vitally interested in accident prevention. Before he became a publisher, a number of years ago Mr. Fritz was actively engaged in calling on many of the paper mills and he told how on many of those calls he was impressed with the need for more work along the line of accident prevention. It was then that he became keenly interested in promoting the cause of safety and when the contests were instituted in the Paper and Pulp Section, he presented a trophy at the first contest fourteen years ago, which contest was only of one month's duration. The second contest ran for eight months. The time was then changed to six months until June of 1931 when the period was changed to twelve months. Mr. Fritz then announced that the judges had considered the records made by each group winner during the term of the contest which closed June 30, and they had voted the Anglo-Canadian Pulp and Paper Mills, Ltd., Quebec, winner of the trophy in Group A, as the winner of the major trophy. Mr. Fritz brought out that this was the first time a Canadian mill had won the big prize, and he hoped this would be an incentive for more mills in the neighboring country to engage in intensive safety work and enter the contest. Mr. Fritz then handed the trophy, a large and handsome plaque, to E. N. Baronet, representative of the Anglo-Canadian Mills, and asked him to take home to his mill his congratulations and the best wishes of the entire Section for a continuation of their splendid achievements in the cause of safety. Mr. Baronet thanked Mr. Fritz for himself and his company, and said he knew that everyone connected with the company would be filled with pride when he returned home with the greatest award that is given to any mill in the contest.

After a brief social interlude, the luncheon meeting dispersed and the members gathered for the business session of the afternoon which was the final meeting of the Section for this year.

Final Session

The concluding meeting of the Paper and Pulp Section was taken up with the reading of one paper followed by a round table discussion which included four ten-minute talks on various paper mill problems.

After the discussion had ended, Mr. Adams introduced the new chairman of the Section, Fred A. Robinson, who addressed the members briefly, thanking them for the honor and asking their co-operation in the future.

"Two years ago," said Mr. Robinson "you took a chance and honored me with two petitions—the Secretary of our Section and the Chairman of your Program Committee. It amounted to two positions. A year later you gave me the same honor again. I do not know just why you did that, I remember as a boy in grade school when youngsters did not pass their examinations, they were asked, in fact forced, to serve a second term in that particular grade. I do not know whether or not that was the motive. However, you did take a chance because I was not active in this group before that time."

After expressing his thanks to Mr. Adams and others, Mr. Robinson spoke of the future. "Now you have a right to expect some statement as to what my plans for the coming year should be," he said. "I haven't any as yet. What they will be depends to quite an extent on the advice of you folks. You would not hire anybody and expect him to go ahead all alone. You would not deny him your constructive criticism and your help and your guidance. I am going to expect that from you and I welcome criticism."

"I should like you to earnestly try," continued Mr. Robinson, "to make the meetings of the Executive Committee when you are called and to answer promptly our questions when we send them to you because it is that response that guides your Executive Committee in giving you what you want."

After concluding his address, Mr. Robinson called on Mr. Simpson, News Letter chairman, who asked that members forward contributions to the *News Letter*. The meeting was then adjourned by the chairman.

Safety Exposition

Another very interesting and informative feature of the 1939 Safety Congress was the Safety Exposition at which various safety products, equipment and apparel designed for the protection of the workman were displayed and demonstrated.

In addition to the many general safety exhibits such as those demonstrating traffic regulations, drivers' tests' etc., there were extensive displays relative to industrial safety. These displays included exhibits of safety goggles, inhalators, masks, ladders, anchors, heating units, clothing and fire extinguishers.

The D. J. Murray Company exhibited the Murray-Lorge automatic shut-off valve, in addition to the firm's unit heaters.

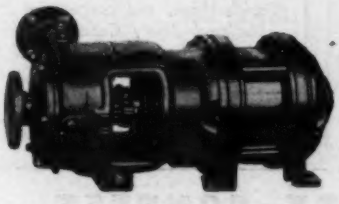
Safe cleaning methods were explained and shown by Oakite Products, Inc.

HISTORICAL REVIEW OF THE PAPER INDUSTRY SAFETY CONTEST

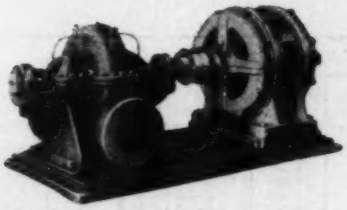
Year	No. of Mills	Man-Hours Worked	Employees	Number of Disabling Injuries	Frequency Rate	No. of Employees per Injury	Mills with Perfect Records
1937-1938	145	116,896,797	53,622	1,603	13.713	33	7
1936-1937	139	123,611,911	56,470	2,015	16.301	28	7
1935-1936	130	100,491,110	45,915	1,517	15.096	30	14
1934-1935	110	86,867,184	42,378	1,439	16.566	29	12
1933-1934	105	71,436,322	34,132	1,402	19.626	24	6
1932-1933	98	60,772,518	34,709	829	13.641	42	11
1931-1932	131	74,569,954	32,454	1,044	14.000	33	9
1931 *	125	48,715,543	39,796	787	15.744	52	15
1930 *	124	47,343,549	36,153	986	20.826	37	11
1929 *	123	49,776,515	36,916	1,311	26 337	27	6
1928 *	122	47,673,816	36,357	1,355	28 422	27	8
1927 *	119	43,802,804	33,786	1,468	33.514	23	6

*Contest period January 1 to June 30.

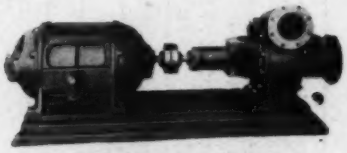
1. Goulds Fig. 3105 Centrifugal Paper Stock Pump.



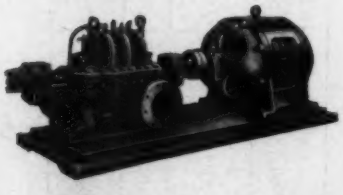
2. Goulds "Close-Cupld" Centrifugal Pumps.



3. Goulds Double Suction Centrifugal Pumps.



4. Goulds Agitator Pumps.



5. Goulds Multi-Stage Centrifugal Pumps.

6. Goulds Fig. 3805 Chemical Pump.

FOR THE PAPER INDUSTRY ...NEW ECONOMIES

Long before the dawn of this century, Goulds was building pumps for the paper industry. That experience—coupled with alert, progressive development—stands behind the carefully engineered Goulds units that today are producing new economies in paper mills throughout the world.

Advanced design, carefully selected materials, and the production facilities of the world's largest manufacturer of pumps are embodied in every Goulds Unit. This combination assures you of new economy and greater dependability when you specify Goulds.

Write today for Bulletin 206. It gives full data on Goulds pumps for the paper industry—a complete line that covers your every liquid-handling job with maximum efficiency.

GOULDS PUMPS Inc.

ATLANTA, BOSTON, CHICAGO, HOUSTON, NEW YORK, PHILADELPHIA, PITTSBURGH, TULSA. Representatives in all Principal Cities

8181

Social Activities

Although the presentation and discussion of safety activities was the main reason for the 1939 Congress ample time was found for social activities.

The main social activities were the president's reception and dance on Monday evening, October 10; the banquet on Wednesday evening, October 12, and the hilarious "Fun-Fest" on Thursday evening, October 13. The latter, held under the personal supervision of H. T. McConnell, known as the "Party Ice-Breaker" and featuring the "McConnell Cotillion," was a source of merriment to all those attending.

The Silver Jubilee Banquet, held in the grand ballroom of the Stevens Hotel, attracted many of the delegates. D. D. Fennell presided at the affair and Dr. George E. Vincent, past president of the Rockefeller Foundation, was the principal speaker. Dr. Vincent, who is also vice-president of the National Community Chest Fund, is a noted educator, author and world traveler. He spoke on "The Larger Selfishness."

The ladies were not forgotten by the entertainment committee. Throughout the five-day meet they were entertained by musicales, teas, a fashion show, trips to some of Chicago's interesting historical points, in addition to the activities attended by both men and women.

An important announcement made at the banquet was that D. D. Fennell had been re-elected president of the National Safety Council for the coming year.

This magazine acknowledges with thanks the courtesy of the National Safety Council in furnishing the photographs used to illustrate this story. — Editor's Note.

THE PAPER INDUSTRY SAFETY CONTEST

July 1, 1938 to June 30, 1939 — **46 Mills Have Perfect Record**

SEPTEMBER SCORES

PERFECT SCORE

Division I—Paper and Pulp Mills

	PARTICIPANT	MILL	LOCATION
GROUP A	Hollingsworth & Whitney Co.	Algonquin & Taconnet Mills	Waterville, Me.
	Oswego Falls Corporation	Fulton	New York
	Anglo-Canadian Pulp & Paper Mills, Ltd.	Quebec City, P. Q.	Canada
	Consolidated Paper Corp., Ltd.	Port Alfred, P. Q.	Canada
GROUP B	Paterson Parchment Paper Co.	Bristol	Pennsylvania
	Consolidated Paper Corp., Ltd.	Belgo, Shawinigan Falls	Canada
	Detroit Sulphite Pulp & Paper Co.	Detroit	Michigan
	Crown Zellerbach Corp.	National Paper Products Co. Division	Port Townsend, Wash.
	Southern Kraft Corporation	Continental Division	Marinette, Wis.
	The Mead Corporation	John H. Heald Division	Lynchburg, Va.
GROUP C	Hoberg Paper Mills, Inc.	Fibre Division	Green Bay, Wis.
	Central Fibre Products Co.	Quincy	Illinois
	Strathmore Paper Company	Woronoco	Massachusetts
GROUP D	Rising Paper Company	Housatonic	Massachusetts
	The Upson Company	Lockport	New York
	Bird and Son, Inc.	Phillipsdale	Rhode Island
	American Writing Paper Corp.	Riverside No. 2	Holyoke, Mass.
	Central Fibre Products Co.	Tama	Iowa
	The Mead Corp.	Sylva Paperboard Co.	Sylva, N. C.
	The Mead Corp.	The Harriman Co.	Harriman, Tenn.
	The Mead Corp.	Southern Extract Co.	Knoxville, Tenn.
	American Writing Paper Corp.	Nonotuck Division	Holyoke, Mass.
	Spaulding Fibre Co., Inc.	Milton	New Hampshire
	United States Gypsum Company	N. Kansas City	Missouri
	Fort Orange Paper Company	Box Board Mill	Castleton on Hudson, N. Y.
	American Writing Paper Corp.	Mt. Tom Division	Holyoke, Mass.
	Central Fibre Products Co.	Vincennes	Indiana
	Central Fibre Products Co.	Mt. Carmel	Illinois
	Ponds Extract Company	Seymour	Connecticut
	Rogers Fibre Co., Inc.	Fibreboard Mill, Div. 1	Bar Mills, Me.
	Hollingsworth and Whitney Co.	Aroostook & Cobbossee Mills	Gardiner, Me.
	International Paper Company	Riley No. 23	Riley, Maine
	Hollingsworth & Whitney Co.	Abenaquis Mill	Madison, Maine
	The Mead Corporation	Nashville	Tennessee

Division II—Paper and Board Re-Manufacturing

Container Corp. of America	Chicago	Illinois
F. J. Krem Box Company	Fittsburgh	Pennsylvania
Fort Orange Paper Company	Paper Box Plant	Castleton on Hudson, N. Y.
Bird and Son, Incorporated	Chicago	Illinois
Kimberly-Clark Corporation	Appleton	Wisconsin
Container Company	Van Wert	Ohio
Container Corp. of America	Anderson	Indiana
Gaylord Container Corp.	Dallas	Texas
Bird and Son, Incorporated	Shreveport	Louisiana
Gaylord Container Corp.	Dallas	Texas
Bay West Paper Company	Green Bay	Wisconsin
Bemis Brothers Bag Company	E. Pepperell	Massachusetts

IMPERFECT SCORES

	Key Number	Rank	Disabling Injuries	Frequency Rate
GROUP A	P- 62	5	1	2.350
	P- 87	6	2	4.128
	P- 44	7	2	4.675
	P- 28	8	3	5.102
	P- 30	9	2	5.362
	P- 19	10	2	5.690
	P- 12	11	2	5.981
	P- 1	12	3	5.995
	P- 21	13	2	6.061
	P- 18	14	3	6.133
	P- 70	15	3	6.380
	P- 64	16	2	6.660
	P- 73	17	6	9.735
	P-140	18	5	10.360
	P- 9	19	9	13.053
	P-136	20	6	13.155
	P- 84	21	7	13.379
	P- 67	22	8	13.911
	P- 69	23	7	14.800
	P-126	24	14	15.616
	P-130	25	6	19.573
	P-102	26	8	19.580
	P- 71	27	7	20.332
	P-114	28	8	21.003
	P- 13	29	9	22.264
	P- 40	30	11	22.801
	P- 27	31	19	25.065
	P-156	32	16	34.291
GROUP B	P- 25	7	1	3.522
	P-163	8	1	3.732
	P- 22	9	1	3.911
	P- 26	10	1	3.925
	P-112	11	1	3.934
	P-145	12	1	5.066
	P- 3	13	1	5.768
	P-142	14	1	6.691
	P- 60	15	2	7.068
	P- 68	16	2	7.691
	P-135	17	2	7.784
	P-155	18	2	9.009
	P-127	19	3	10.779
	P-120	20	2	12.140
	P-137	21	3	13.941
	P- 59	22	4	16.898
	P- 58	23	4	18.183
	P- 23	24	4	20.393
	P- 45	25	5	20.847
	P- 54	26	5	22.004
	P-107	27	6	22.220
	P- 2	28	4	22.398
	P- 82	29	3	23.709
	P-104	30	6	26.072
	P-153	31	18	68.246

September Report Missing — covers two months only: P-1, Mead Corp., Heald Div., P-3, P-142, P-120, P-23, P-2, P-82, P-113, P-143, P-48, P-111, Mead Corp., Sylva Paperboard Co., Mead Corp., Harriman Co., Mead Corp., Southern Extract Co., Fort Orange Paper Co., Boxboard Mill, Mead Corp., P-134, Bemis Brothers Bag Co.

September Report Missing—covers one month only: R-6, R-28, R-32.

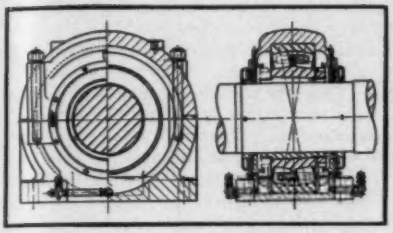
	Key Number	Rank	Disabling Injuries	Frequency Rate
GROUP C	P-119	4	1	5.903
	P- 88	5	1	7.119
	P- 56	6	1	7.192
	P-122	7	1	7.538
	P- 55	8	1	8.695
	P- 91	9	1	9.634
	P-128	10	1	9.971
	P- 80	11	1	10.498
	P-103	12	1	10.616
	P- 15	13	2	11.228
	P-124	14	2	12.651
	P- 51	15	2	15.377
	P-113	16	2	19.113
	P- 41	17	3	19.535
	P- 17	18	2	21.341
	P-100	19	3	23.549
	P- 32	20	3	25.750
	P-143	21	3	26.935
	P- 34	22	4	37.520
	P- 48	23	3	40.266
	P- 29	24	7	43.026
	P- 47	25	5	45.933
	P- 43	26	6	51.762
	P-111	27	5	52.381
	P-158	28	14	125.957
GROUP D	P-160	22	1	13.487
	P-148	23	1	14.226
	P-129	24	1	16.049
	P- 98	25	1	16.954
	P- 63	26	1	19.848
	P-125	27	2	26.400
	P-157	28	2	26.557
	P- 65	29	1	27.524
	P-106	30	2	28.858
	P-117	31	2	31.133
	P-146	32	3	41.618
	P-151	33	2	44.250
	P-138	34	3	44.941
	P- 42	35	3	48.329
	P- 14	36	4	49.974
	P- 49	37	4	57.377
	P-116	38	5	58.439
	P-134	39	3	66.888
	P-147	40	2	71.772
	P- 99	41	4	75.700
	P- 50	42	7	78.340
	P- 81	43	7	99.398
	P-131	44	4	128.119

Division II—Paper and Board Re-Manufacturing

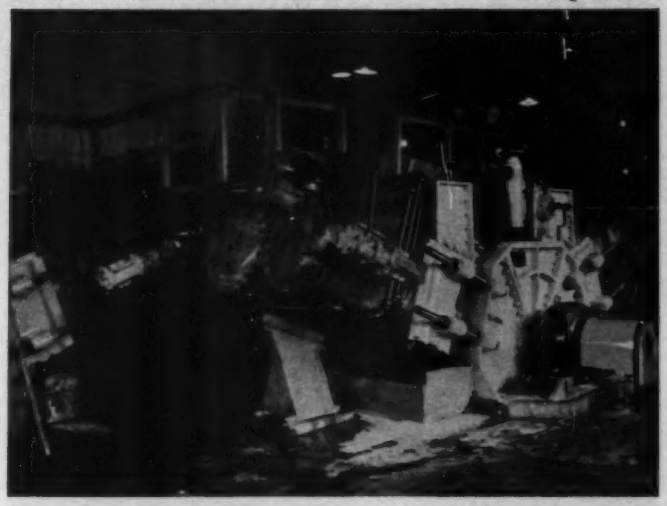
	R-23	13	1	3.953
	R-20	14	1	4.065
	R- 2	15	1	4.507
	R-35	16	1	4.977
	R-18	17	1	5.684
	R-19	18	1	11.500
	R-21	19	2	13.343
	R-34	20	3	13.376
	R-27	21	2	15.905
	R- 6	22	2	16.703
	R-36	23	2	16.937
	R-28	24	2	21.288
	R-37	25	4	22.809
	R-26	26	3	24.544
	R- 1	27	6	35.703
	R-32	28	1	39.866
	R-31	29	5	41.501
	R-11	30	3	79.930

When SKF Bearings are used on Pulp Grinders, you can

Depend On Them



BUILT BY MONTAGUE MACHINE CO. SKF-EQUIPPED



The brute loads imposed on each SKF Bearing of this Great Northern Grinder run up to 75,000 lbs. at 240 r.p.m. But SKF Bearings, with their high capacity and low friction characteristics, carry them with practically no effort.

They're built to withstand the loads created by the combined weight of the stone, shaft, and heavy pressure in the pockets day after day—and to do it without needing attention. In addition, they're protected from dirt, pulp, and water by SKF Pillow Blocks which are easy to remove when stones are changed. The super-performance which SKF Bearings give make them the preferred bearing in the Paper Industry. 4200

SKF INDUSTRIES, INC., PHILADELPHIA, PENNA.

● *SKF makes more types and sizes of ball and roller bearings than any other manufacturer in the world.*

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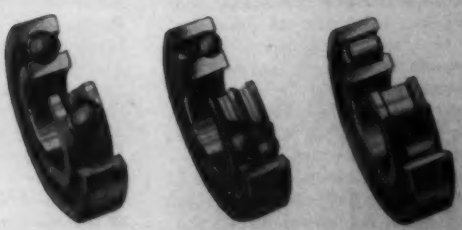
BALL AND ROLLER BEARINGS



Convention Papers . . . Abstracted

The accompanying abstracts are of papers presented at the Twenty-fifth Annual Congress of the National Safety Council, October 10-13, 1938, at Chicago, Illinois.

Safety—An Operating Problem

AGNER B. HANSEN, Exec. V. P. & Gen. Mgr. Northern Paper Mills, Green Bay, Wis.

Every man, or woman, prefers to work in a clean, well-lighted mill. People are happier and more satisfied in clean surroundings, and that is the first step in making the mill a safe place in which to work.

When a company is formed, capital is put to use and men are put to work. Management, to obtain profits, must give consideration to quality and quantity of product which involves the safety and health of the organization.

In spite of the Government's strong attitude along safety lines, it is surprising to note that some managements have not yet been able to see the economy in an efficient safety organization. Some safety men have asked, "How can you get management interested to back up the safety organization?" It is the job of the safety man working under that type of management to sell the management after some experience with facts, and later to strengthen it with more facts. Good management is not hard to sell, but the safety leaders, whether the management is good or bad, must produce the evidence and do a sales job. This can be done by developing confidence particularly in the foremen, by obtaining their cooperation, and then in keeping track of the results over a period of time.

In the plant that is being built or rebuilt, aisles should be well maintained and new equipment should be purchased already guarded, because the machinery manufacturer usually can guard it more satisfactorily. Management must see that illumination is good, that cleanliness is maintained and that sanitary conditions exist.

In addition to the material set-up, it is management's duty to educate employees in safe and healthful conditions. Men must be given work to which they are fitted. It is essential that someone train the man on the job in the best use of the equipment. Hazards connected with his job should be pointed out, and in this training the older employees have a responsibility, not only to the company, but to themselves. Healthful working conditions are possible only in a shop where mutual respect and helpfulness exists among the employees.

In the hiring of help, physical examinations should be made, not with the idea of keeping men out, but for getting good, healthy men for the job. In these days of governmental interference in business, labor difficulties, etc., safety men can assist management to a tremendous degree, because the impression that the new employee gets of the company for which he is going to work is an enduring one, and if it is correct from the beginning, it will be difficult for anyone to shake his confidence.

A physical examination should not be something that the new man despises and fears, but which he realizes the company is doing for him in order that he will be a better employee and citizen. Naturally, the larger percentage of applicants pass such examinations without much difficulty, but management's attitude is shown best in its method of handling exceptional cases.

The use of examination records against an employee in a case of difficulty before the Industrial Commission and Compensation Boards, is unnecessary in matter of defense, for if there is something wrong, as a general rule, it should have been corrected before it was necessary to become involved. By using these records against an employee as a defense measure rather than using them only as a corrective measure, confidence of the employees is destroyed and they become suspicious, aggravated and irritated whenever a physical examination is requested.

Management should promote and encourage a safety committee, for in such collective thinking a better understanding of the problems can be had. The safety engineer should sell the manager the idea of sitting in at these meetings, not to dominate them but to show his interest in the work they are doing. Success or failure in safety generally resolves itself down to whether or not the safety engineer, the executives or the management have used good or bad psychology. Safety is a problem which management dare not shy away from at any time.

This is an ever-changing world and if we, believing ourselves progressive, desire to stay in the race, we must change with conditions. Chemistry moves so fast that the processes of today are obsolete tomorrow, so it is with human relationships. Along with safety should go healthful working conditions.

Something of the objectives and work of the National Association of Manufacturers' Committee on Healthful Working Conditions (Mr. Hansen is a member of this committee) should be of interest. The committee has prevailed on Dr. Victor G. Heiser, former director of Health of the Philippine Islands and author of *An American Doctor's Odyssey*, to head this work as research director, and Dr. Heiser feels that much can be accomplished in a wider extension of good safety and health practices in industry.

Authoritative surveys show that approximately 80 to 90 per cent of the large industries give excellent medical care and health supervision to their men, but the smaller units with 300 employees or less have not felt able to give such care although they account for a large portion of the industrial population of the United States. In many instances, the managers of these smaller plants have not been convinced that it is practicable to give the medical care and health supervision that are given in the larger companies. It is largely with the hope of serving them that the Committee on Healthful Working Conditions is conducting its study.

That the need exists is further demonstrated by recent figures given by Dr. Newquist of the American College of Surgeons. A survey of a cross-section of employees made in 1936 showed that 352,591 workers lost 208,648 days of work due to industrial injury, or approximately one-half day per man per year. The non-industrial time lost due to sickness was fifteen times as great.

American industry, as a whole, is wide awake to the necessity for a satisfactory safety and health program because, first, it is the humane thing to do and is believed to be the first consideration that management today recognizes; second, it is the economical thing to do, and when foreign competition with its low wages and low standards of living attempts to bring its goods into this country, it is necessary that we produce our merchandise at a low cost without lowering our standards of living; finally, we bring about, through our safety organizations, a much better employee-employer relationship provided this issue is honestly and intelligently applied.

DISCUSSION

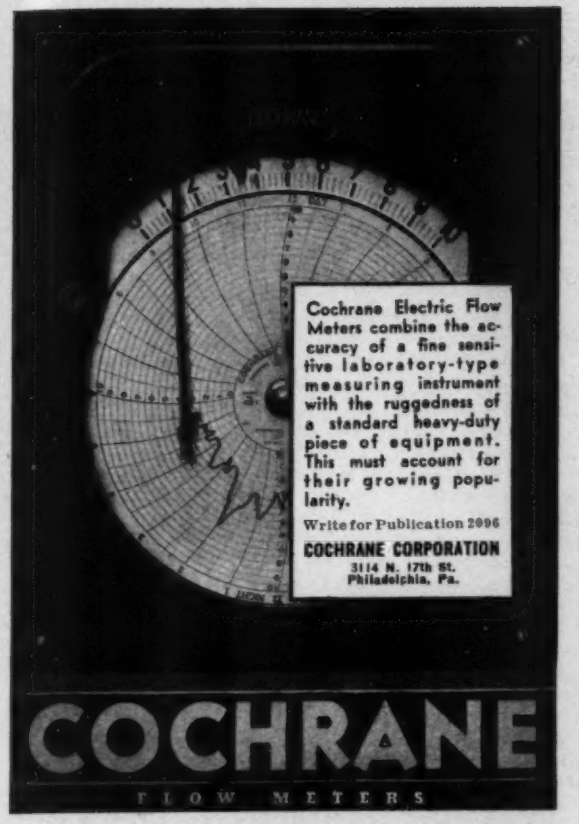
At the conclusion of Mr. Hansen's address, the question was raised as to whether small industries are organized to provide themselves with safety and first aid methods. Several members testified that they knew of several small industries that had worked together to this end. The tie-up between medical examinations and workmen's compensation was then brought up and it was stated that the compensation board that is carrying the man to the fullest degree in case of accident is entitled to know what physical disability he is facing at his work. Confidence should be built up within the employee so that he would appreciate and welcome the physical examination. One member then stated that there are a lot of men who are entitled to work who are not physically perfect. Employees in some states have to assume responsibility themselves, if they are physically imperfect.

Electrical Hazards in the Paper Industry

R. G. McGIVNEY, Chief Electrician Oswego Falls Corp., Fulton, N. Y.

Due to conditions peculiar to the paper industry, electrical equipment is subject to greater than normal deterioration. This is due, to some extent, to the presence of extreme moisture, steam heat and chemicals which are destructive to insulation and frequently form paths which lead to short and grounded circuits.

Strides have been made lately in the improvement of equipment. Modern con-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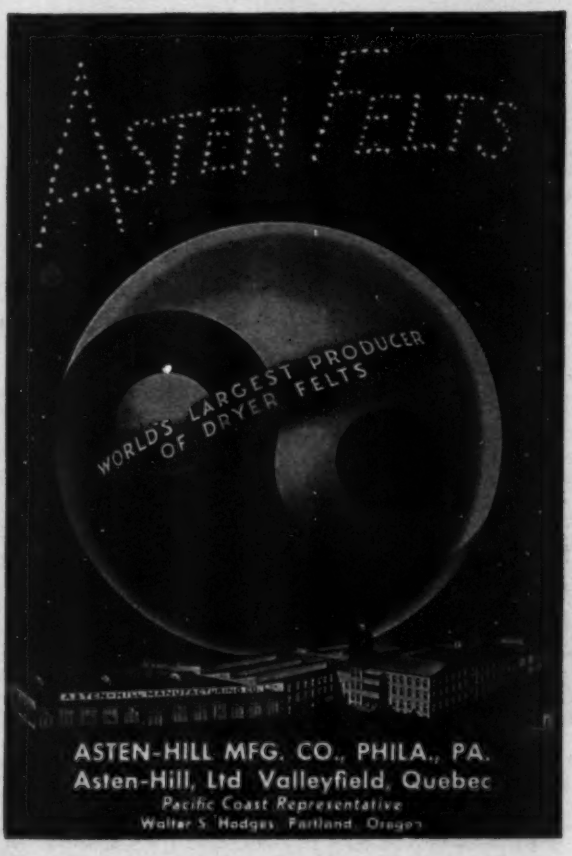
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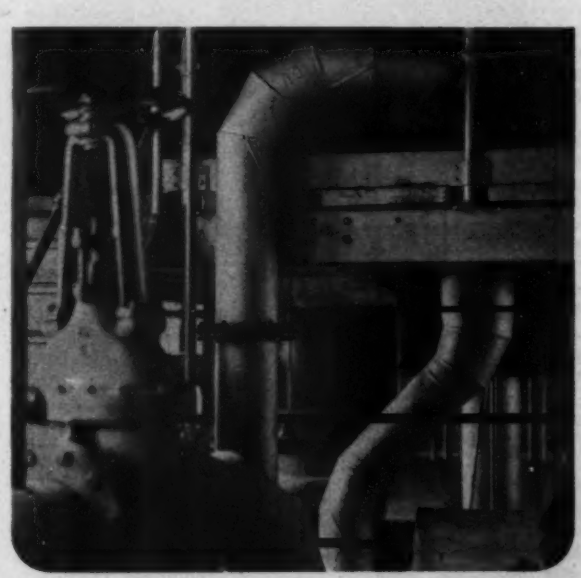

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trollers are provided in various types of enclosures, not only to protect individuals from accidental contact, but also to make the apparatus immune to conditions of dust, water, etc.

Provisions should be made for adequate switching facilities in a central switchboard, located at a convenient center of distribution. Feeder circuits should originate at the main switchboard and be departmentized as much as possible, terminating in groups of safety switches which serve each individual motor. An effective grounding system for all existing conduit lines, transformers, controls and motors aids in preventing fatalities when motors and conduit lines develop accidental grounds.

Special attention should be given to portable power-driven conveyors and hoisting machines. Portable equipment is more likely to develop a ground than permanently installed electrical equipment. The flexible cord that carries the current to portable machines should have a spare conductor to ground the motor frame to the existing grounding system.

Outdoor sub-stations also contain many hidden hazards due to their compactness, therefore should be properly protected against inquisitive or accidental contact. The obvious dangers of open-type switchboards should not be overlooked. The dead front-type board will eliminate hazards.

To prevent accidents occurring in the mill yard when poles snap off at ground line, every mill should frequently examine all wooden poles. When poles are being replaced, serious attention should be given to treated lumber or steel plates.

Fire extinguishers should be placed at strategic points of advantage and marked "For Electrical Fires Only."

Safe lighting can be met by the installation of proper equipment, such as lamp guards and vapor-proof lamps.

The practice of testing power lines with lamps to ascertain if the line is hot is a dangerous practice. Voltage testers that may be carried in the pocket are the best insurance against accidents of this nature.

There is no substitute offered for vigilance and responsible supervision in avoiding electrical accidents.

The following points have been found to be helpful in reducing electrical hazards:

1) A positive and dependable grounding system for all electrical equipment.

2) Proper installation of switches in the time side of power circuits or the use of dead front type, so that fuses may be replaced safely.

3) The use of modern equipment and approved material.

4) The use of low voltage systems where employees work in hazardous locations.

5) Careful periodic inspection.

DISCUSSION

Chairman Adams brought out the fact that operators in his company are trained to use their left hands to throw a box switch so that if a flash occurs, it goes by the workman's face. One member asked Mr. McGivney about the tagging of switches, to which the speaker replied that he preferred to have the lines locked instead of using the tag system. The marking of high tension lines under the pavement so that workmen making repairs will not drill through a conduit, was another point raised in discussion. It was pointed out that colored cement would aid in marking the location of conduit lines. Another member said that a sort of a signal device can be arranged by making a connection with an electrical hammer so that when the hammer strikes the conduit, a bell would ring or a light would flash.

Safety When the Mill Is Down

J. A. LIMPERT, Superintendent
Kimberly-Clark Corp., Kimberly, Wis.

A characteristic of pulp and paper mills as compared to some other industries is the tremendous investment in complex and heavy equipment which is necessary for the men to operate in order to produce a ton of product. Improvement in product and the cutting of costs demand that this equipment be operated as efficiently as possible and in the most up-to-date manner. This means that changes in design and layout and methods of operation are constantly taking place. These unusual situations create new safety problems which cannot be taken in stride by the average safety program. They require original thought and hard work. No matter how good the major safety program may be, if sufficient attention is not given to this phase of safety, the plant is very likely to have unforeseen accidents of a serious nature. The question is, therefore, how best can a mill protect its workers from the hazards thrust upon them by this everlasting policy of change. Most changes and variations in equipment and process are put in when the mill is down. The ideas which produce the change probably were formulated weeks and months in advance of the actual job. Let us, therefore, follow out a typical plan which is used in a great many mills and which has helped prevent a large number of accidents on shut-down jobs.

DRAMATIZES PROBLEM

From this point on, Mr. Limpert presented his views and points by creating a hypothetical problem, employing Chairman Adams and Fred Robinson as his safety engineer and engineer, respectively. In illustrating the problem, Mr. Limpert assumed the role of "the man who runs the mill under a manager."

The situation, as described by Mr. Limpert, was that the mill is running six days a week and there is going to be a shut-down the following Sunday. There are, therefore, three kinds of jobs coming up Sunday. These are: (1) The operating work, work which, for instance, the machine crews do themselves and the crews down in the plant—such as putting on wires and felts, and cleaning up machines; (2) the maintenance job—fixing the equipment up into its original shape, and (3) the shaping up of a schedule or budget for some certain job.

Mr. Limpert then stated that in this mythical plant he and his associates have evolved a plan to make it as easy as possible for all the operators and maintenance men in the mill to let them know when things are going haywire in the mill. They are going to do this by putting a sheet of paper in every department, where all the foreman has to do is to go over to that piece of paper and mark the forth coming jobs down.

Mr. Limpert then stressed the value of the maintenance meeting. If the work is to be done on Sunday, the meeting should be on Thursday and should include the mill manager, the safety man, the engineer and the tour boss and others. Before this, the engineer has correlated all the work that is going to be done on Sunday. Out of this meeting has evolved a program of what work is to be done on Sunday. Not only what is to be done, but also the time that it is going to be done so that the maintenance work dovetails in with the operators' work.

Mr. Limpert then stated that the Sunday job went well and no accidents occurred. On Monday morning the foreman should make sure that any changes that the Sunday men put into the equipment are gone over very thoroughly before the Monday men handle the equipment.

Mr. Limpert then illustrated on the blackboard how the paper machine winder was left and showed that a change had been made requiring that a new roll be installed in a particular position. Although all operators had been informed of all changes, there was an accident. A third hand threaded the paper through the winder in a certain manner, but his hand became caught between the new roll and the winder drum. He did not realize the new roll was about an inch from the surface of the winder drum.

The reason for the accident was due to the negligence of several of the mythical people in charge. The superintendent should have seen the hazard of the two rolls within an inch of each other, the engineer should have noticed it and the safety inspector should have seen it.

First Aid Instruction To Workers

R. W. CROUCHER, Personnel Director
Minnesota and Ontario Paper Co., International Falls, Minn.

The primary purpose of teaching employees to give proper and intelligent assistance to injured fellow-workers divides its importance between the humanitarian and mercenary aspects. But to both the cost-minded and the sympathetic it means a lessening of severity, and to the safety director the results are the same.

The safety director's first job is to sell neophyte students on the advantages they as workers may expect to secure. Success of any program of first aid instruction looks, of course, to the instructor. He must be a real teacher, one who is able to keep his classes filled by interesting subjects, by tactful corrections and by a thorough knowledge of the ground he is covering. Our Canadian cousins are far beyond us in numbers of competent first aid instructors.

Co-operation on the part of the management in providing suitable quarters for classes, materials needed in carrying on in-

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struction, and in evincing interest in the subject is important. The highest resident official of the company should drop in once or twice during the course. The safety director should inject a touch of the unusual into the meetings by inviting a 10-minute speaker to be present. One of the State Highway Patrolmen fits in here ideally.

A form of instruction which calls for attendance once a week for a matter of three months is more likely to hold the interest of the men, than one requiring their attendance every night for a period of two weeks. Thus a course providing six lectures, for example, is better divided into twelve lectures and demonstrations by using only half the matter contemplated and taking twice as long in elapsed time to give it out. The number of men in the class should be limited to twenty-five. Qualified men will do more for a well directed accident prevention program than any other single form of activity.

No matter how small a plant may be, a program of first aid instruction is never finished. Even if all men are qualified, instruction should not stop, although it could then take the form of memory refreshers.

First aid instruction takes the lead in getting at the meat of the matter by holding continually before the students the subject of accidents—injury—suffering—loss of pay.

Control of Industrial Health Problem

COL. THOMAS DOBBINS,
Medical and Safety Director,
Servel, Inc., Evansville, Ind.

The control of industrial health problems, with a few exceptions, differs very little from one industry to another. Medical examination for the purpose of preemployment selection differs but slightly from a general clinical examination, only it is necessarily conducted with more despatch. An experienced medical examiner will not hope to find a 100 per cent population for his industry, but to assist in the suitable placement for those seeking employment.

It is not so difficult to control occupational diseases, as they result from the exposure to some known toxic substance, the contact being by mouth, respiratory system, or with the skin. If the workmen are properly protected, they will not develop occupational diseases.

Available figures indicate that something like 40 out of 10,000 workers are suffering with active tuberculosis, and about 100 out of 10,000 have latent or healed lesions. Tuberculosis often results from contact with those who have it in its acute stage. The workman is under industry's control but a few hours each day, so that the best that can be done with tubercular suspects is to prevent their exposure to employment that might accelerate or aggravate a dormant condition, and prevent their exposing others.

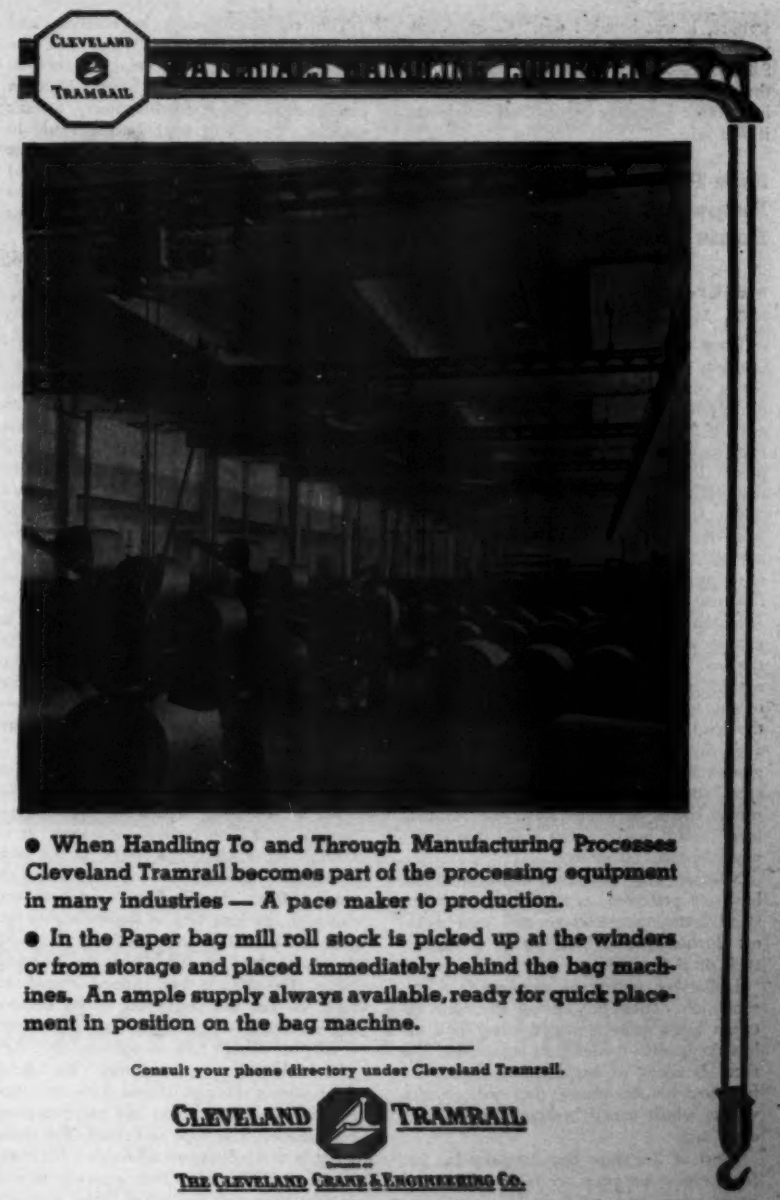
The usual exposures in industry consist of gases, dusts and fumes, so that the most logical method of control is to have the Process Department consult with the doctor. It is necessary that any plan for the protection of the health of workers must include intelligent use and care of equipment. The workman must be properly instructed as to the hazards incident to the job and the proper use of his equipment.

Periodic plant inspection by the doctor, accompanied by the department supervisor, has a most desirable effect on the morale of the workmen.

Whenever the old infectious diseases—diphtheria, smallpox, typhoid fever—occur in a community, someone has been remiss in his duty. The Government Health Service, the State Board of Health, the City and County Health Officers are usually active; but the public, prone to forget the devastation of diseases in the earlier generation, is often slow to co-operate in health measures. Diphtheria, for instance, could be wiped off the face of the earth if the public would do its part.

DISCUSSION

The first question raised after Colonel Dobbins had finished his address was whether, after the original examination, examinations were made periodically. The author stated that the workmen in his plant who were exposed to silicotic conditions were X-rayed and examined once a year. The Colonel elaborated as to how these examinations are accomplished and also stressed the fact that his company taught safety, motion study, etc., to employees. It is effective when you show a little personal interest in the other fellow's



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welfare, it was brought out. Co-operation with various agencies such as the National Safety Council and those who know about the product the men are working with is of importance in aiding the medical examiner, it was said.

Safe Practices in Handling Pulpwood—Mill Yards Boats and Railway Cars

L. B. SHAFFREY,

Bowater's Newfoundland Pulp and Paper Mills, Ltd., Corner Brook, Newfoundland

These remarks relate to practices of our company and are based on the writer's experience of nearly twenty-five years in handling pulpwood in the United States, Canada and Newfoundland; and in nearly every instance, on the handling of four-foot wood, practically all of which was used for the manufacture of newsprint.

The handling of pulpwood with manual labor is, in most places, a hazardous occupation; therefore, care should be used in selecting crews. The selection of a good foreman is the first step towards safetty.

If the foreman teaches and shows his men by actual demonstration that he knows the best methods of using a hook, placing a sling in the rack or crate, the proper end of the load on which to hook up so that the load can be hoisted without spilling, and other simple tricks of the trade, he has gone a long way toward winning their respect and admiration, and if done in the proper spirit, the chances are he is making loyal careful workers who will listen gladly when he talks on safety.

Starting with new men, those from the bush are preferred, as they seem to understand better than average mill yard workers the unexpected behavior of a slippery stick of pulpwood.

Unloading pulpwood steamers is a seasonal job. Long periods of idle time between boats make a gang restless, and unless they clearly understand beforehand that there is about so much money in the job for them for the season, they will go elsewhere, which means breaking in new men every trip.

Most of the ships our company has had for the past ten years are four or five-hatch ocean-going type, with boilers amidships. Previous to that, most of the wood handled was taken from lake and river boats, which have boilers aft and the pilot house forward, with clear decks between. Unloading of lake boats is considered as safe as that of the ocean tramp, and the former are more efficient woods carriers where they can be used.

Wharf cranes are considered far superior to the slow old winches usually found on ocean ships. Ocean boats, with their immense amount of rigging on deck, are sometimes difficult to unload efficiently with revolving wharf cranes. The main difficulty is that there is no room for swing.

Ocean ships with smaller hatch openings probably give more protection to the workmen in the hold than the lake boats. However, it is believed most workmen prefer the lake boat with more open hatches and wharf cranes. They get more cords per man hour and do not lose so many loads by spilling.

The equipment used in hoisting and swinging the bundles of wood over the heads of the men must be maintained in first-class condition at all times. Men on piecework are liable, in their hurry, to take chances. They will start getting ready to load another rack or crate of wood before the load being hoisted is entirely out of reach. This is the greatest worry of the signal-man, who is continually urging his men to keep from under the loads.

Regular and thorough inspection of hoisting ropes, hooks, slings and everything else used in handling the bundles is most important.

Having used manila rope, wire rope, different sizes of coil chain and a combination wire rope and chain, the one our company's workers like best is a coil chain with five-eighth inch diameter link. It is about twenty-two and a half feet long made up. On one end of the sling there is a ring six inches inside diameter, made up of one and a half inch material. On the other end there is a long link about three inches by six inches inside, made of one inch material. One side of this link is flattened to about five-eighth inch for a distance of about an inch. None of the material in the link is removed where it is flattened. This permits the link to pass through the slot in the cargo hook. The men are furnished the company's home-made safety hook for hoisting wood, which is considered the best one for this purpose.

The sling has a loose link of smaller material fastened to one of the links in the chain at the point where the chain stops reeving on a three-quarter cord load. It is a single-reeve sling, and is laid in the rack before the rack or crate is loaded with wood. When this loading is finished, the end with the long link is thrown across the load and passed through the large ring, and then placed on the hook of the hoisting cable. The sling is then slipped around the load so that the large ring is on bottom and in front. When the load is picked up, it sort of rolls in rack to tighten.

Considerable experimenting has been done during the past season with two new types of sling, one chain and one two-piece combination wire rope and chain. The chain sling is a double-reeve affair and the combination sling single. Both are safer to use, in that they grip the wood better than the sling now being used. Another good point is that each will easily dump in the air when the load passes outside the rail of the ship.

A wire rope sling grips wood best of any that has been used, but it offers difficulty in dumping and in measuring by sling load. It twists, coils and kinks easily, is hard on a man's hands, and will not lie straight in the bottom of a rack. It is in the way, and the idle part of it covers a lot of space, while the idle part of a chain can be put in a small pile.

In handling pulpwood, workmen often pick up or carry the stick by placing the left wrist or forearm under one end while handling the other end with a hook. This will break the skin on the wrist unless the latter is protected by a gauntlet glove, and is a frequent source of infection, particularly from rough, green balsam wood that has been held in salt water. Scratches, bruises, punctures and blisters cause most of the lost time. A common occurrence is for a new man to place his hand on the wood while it is being loaded, and a fellow workman on the other side drops a stick of wood on it. The result is usually a badly crushed finger.

Experience has shown that the best footwear is a pair of heavy shoes with calks—the same as used by most rivermen. The insecure footing where a man has to stand and work until the boat is practically unloaded is such that there is danger of many slips and strains, without these calked shoes.

Some workmen, in their desire to get on better footing, try to dig down to the bottom underneath the hatch too quickly, leaving parts of the cargo around them at a higher level. The better and safer way is to keep all the tiers well broken down until near the bottom. A serious accident occurred on a lake freighter when workmen left two tiers of wood in the bow. As the ship lightened, the bow came up faster than the stern, and the tops of the tiers naturally settled away from the bulkhead. This was not noticed until after the piles toppled and two men had been seriously injured.

Discharging wood from ships is dangerous work, and everybody connected with it should be most cautious.

Summer time operation of wood yards is much safer than in other seasons.

Piling operation at our mill is handicapped by having to store a large quantity of wood in a small area. Storage capacity of two hundred and twenty-five thousand cords of wood is divided into three piles of sixty-five to eighty-five thousand cords each. To store this amount, the wood must be piled very high around and outside the base of the pile. The average height of the wood tiered around the piles is forty-five feet. In some places it is sixty-five feet. The corded wood is drawn slightly toward the pile from the base, tapered sufficiently to stand. Two outside tiers are used containing about five per cent of the contents of the entire pile. Building these tiers of wood is dangerous work and requires experienced men.

At points where it is intended to break down these piles, three-inch by ten-inch planks are placed ten feet apart at an angle of about seventy degrees. Around each plank is placed pieces of discarded wire rope, about four or five feet apart on the plank, and the ends are allowed to trail back into the tiers. The wood piled on these as the tiers are being built holds the plank in its original position when the cording is broken down. As a safety measure they are a great help to the men breaking down the piles. They are used as ladders and are an excellent preventative in holding back slides of wood.

It would pay the management in low cost reclaiming, and would be safer for their men, if all wood piles could be built to reclaim from the opposite side from which they are built. Long piles that parallel a stacker track should be started in the middle of the yard and built both ways, and reclaimed from both ends. Where this is not possible and tunnels are built through the piles for portables, it will be found to pay in efficiency and safety if the tiering over the tunnels is extended up through the pile

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RYERSON

Facts About Accidents in the Paper & Pulp Industry

Interesting and Valuable!

What were the outstanding facts about accidents in the Paper & Pulp Industry during 1937? How did they compare with other industries? How did your plant's record compare with others?

These and many other revealing and important data are presented in detail in "1937 Accident Rates In the Paper & Pulp Industry", recently published by the National Safety Council. We'll be glad to send a copy FREE to any Safety Director or other plant executive upon request. Simply drop us a line on company letterhead.

Contents . .

Outstanding Facts
Comparison with other Industries
Experience by Type of Industry
Experience in various types of Mills
Experience in various Departments
Causes of Serious Accidents
Disabling Injuries by Industrial Groups
Types of Accidents
Best All-Time Records
Individual Plant Records

PAPER & PULP SECTION NATIONAL SAFETY COUNCIL TWENTY NORTH WACKER DRIVE CHICAGO ILL.

far enough to separate the pile into sections. The cost of this would be offset by the increased facility in breaking down the corded wood.

The size and type of pile has much to do with easy, safe and efficient reclaiming. Our piles are more than one hundred and twenty-five feet at the highest point, and two of them have to be reclaimed from the same side on which the wood was stacked. From the top of our corded wood to the peak, the wood is piled in cone shape on the front, and then wooden chutes are put at the top of the stacker to slide the wood to the back of the pile. This means that more than two-thirds of the wood is stacked against us and that only thirty per cent will slide easily the way we would like to have it. Sticks of wood are inclined toward the back of the pile, and each one is firmly pinned down by the tremendous weight of more than a hundred feet of wood, so that it is impossible to keep the wood properly sloped. A crane with a wood grab works in from the sides and helps wonderfully, but with that we sometimes get conditions in our pile where the wood is perpendicular and a hundred feet high, sometimes with a bad overhang. In such cases, we know of no remedy except a few shots of dynamite, which we use sparingly on account of the additional hazard. A couple of agile, careful men on top of the pile can sometimes produce slides by hitting key pieces with small sticks of wood thrown from a little distance.

For reclaiming our two large piles, two cable conveyors below ground level under each are employed. These with a crane, powered by Diesel engine, and equipped with pulpwood grab, make splendid equipment for the job. Our third pile is stacked by a cable running over towers, with return below ground level. The pile is built from one end and reclaimed from the other, so that the wood is all inclined toward us, which is a remarkable help. It is an actual fact that we handled and used this pile of wood in December, January, February and part of March without a single shot of dynamite, and did it cheaper than we reclaimed wood from other piles in summer with dynamite.

The tools our men use in the wood pile in the winter consist of pickaroons, hooks, pike poles, peavies, striking hammers, axes, bars, ladder, rope, safety harness, etc. Pickaroons are probably used more than all the rest put together. A good long peavey with good socket and spike and the hook taken out is a most useful tool for lifting and prying sticks loose around a woodpile. All these tools must be inspected regularly and maintained in first-class shape.

Rail wood comes mostly in box cars, and is unloaded by individuals on contract or piecework. In summer the wood is thrown from the cars into river. In winter, the wood is unloaded into a conveyor. There are practically no accidents. A pulpwood hook and pickaroon are the tools used, and they must be kept in good shape.

There is no magic "cure-all" for preventing accidents in handling pulpwood, but better records can be made by not taking unnecessary chances, by paying more attention to the little things, and by getting first aid promptly for slight injuries. The foreman should, as one of the principal parts of his work, instill the safety program into the minds of his men, and he should be checked up on this by the safety supervisor and superintendent. It is the same as any other work—the more supervision it is given, the better the results will be.

DISCUSSION

Mr. Shaffrey was asked if he attributed the fact that few men get toe injuries while handling wood, to the men's ability. It was brought out that the men wear rubber boots and that there were toe accidents but that the men could not be induced to buy safety shoes. Price was given as the reason for this. It was brought out that the flat cars were unloaded by cranes. The flat cars had safety stakes. There followed some discussion as to the merits of safety stakes on flat cars. Bundling of wood was the next point brought up. Mr. Shaffrey explained that his company used a wire rope and a locking device for this work. Still another interesting consideration was that of the wisdom of using a stream of water to dislodge key logs, to break down overhangs and to cause slides in breaking down piles. Several members vouchsafed the usability of this method in the summer time. The reclamation of logs from piles was discussed by Mr. Shaffrey and others. The use of the safety harness, ladder and dynamite was enlarged upon by the author of the paper.

Eliminating Hazards in Boxboard Conversion

G. J. BIENVENU.
Supt. Container Division,
Gaylord Container Corp., Bogalusa, La.

As these remarks will be confined to hazards most commonly encountered in corrugated and solid fiber box conversion, such plants are herein divided into the following departments: warehouse; corrugating and pasting; cutting department; finishing department; shipping department, and maintenance department.

As a start in the plan to eliminate hazards in our company, it was thought best to first establish in everyone's mind just what was considered a hazard. A series of meetings was called, first with the foremen, safety engineer and his committeemen, then the workers themselves. At these meetings, an attempt was made to list the duties of each job and the hazards encountered thereon, and finally a list was drafted of these duties, as well as their hazards.

These were printed in booklet form and each worker was given a copy. This enabled him to familiarize himself with the duties and hazards of the job above or below his, as well as with his own job which enabled him to apply himself for the next job and acquaint himself with its hazards.

WAREHOUSE

Thirteen hazards with their eliminations are listed briefly as follows: (1) constant hazard of having a stack of rolls of paper topple over, or having bottom roll slip out and spread pile—elimination is in careful stacking and chocking of rolls; (2) tripping and turning of ankles—adequate aisles should be allowed and kept clear of paper and trash, and plugs should be kept off floor; (3) rolls falling out of mechanical grapple hooks—if plugs are not knocked into rolls flush with ends, there is possibility of roll slipping out of grapple hooks; (4) falls from top of roll stack—instructions are to tear away all loose paper; it is compulsory that men wear rubber soled shoes to prevent slipping; (5) crane cable breaking, causing roll to fall—crane operator is required to check limit cut-off switch when entering crane to see that it is working correctly; (6) running crane off track and plunging into pit—good lighting is essential in order that operator can see at a glance that he is lined up correctly; care in lining up transfers; all locks should be made of steel and inspected monthly; crane should be under control at all times and magnetic brakes in good shape; all working parts should be kept in good condition; (7) rolls, nuts or parts of crane falling on persons below—no one should be under the crane at any time; upon sounding siren, persons are required to move from path of the crane; (8) pulling crane off track, breaking cable, straining a machine or causing stack to give way—roll should not be pulled that will not come freely when wedged between two other rolls; remove top rolls first; (9) rolls sometimes swing out instead of hoisting straight up, which may knock the groundman off stack or hit him in lower part of body—groundman should make sure he is in the clear before giving signal to crane operator; (10) foreign bodies in eye (dust, pieces of steel, etc.)—rolling of cranes over monorails causes wear and deposit of steel dust upon the rail; crane operators must wear goggles while in crane; (11) mashing feet by rolling rolls on them—all rolls should be rolled in direction they were rewound; care should be exercised that feet are kept clear of rolls at all times; (12) slipping on steel plates in wet weather—diamond shaped steel plates are used as a bridge between cars and loading platform; (13) cuts from defective strapping and injuries to self and others in handling of strapping tools—tools and strapping should be handled carefully.

CORRUGATOR AND PASTER

Ten hazards with their eliminations are listed briefly as follows: (1) mashed fingers and hands—when feeding strawboard into corrugator roll, strawboard should be held against upper roll with palm of hand; fingers should be bent back so that hand will not follow roll around, but will run up over guard; (2) burns from hot pipes, preheaters, hot bars and escaping steam—all pipes should be covered with asbestos; care should be exercised when around preheaters or adjusting corrugator fingers; all taps and steam valves should be inspected at end of each week; (3) hands in gears and pull rolls—all gears and pull rolls cannot be guarded mechanically; care must be exercised; (4) silicate and foreign bodies in eyes—in scraping pressure rolls or corrugator rolls, or in cleaning double backer steam plates, goggles should be worn; handle backed paper with care, protecting eyes from flying silicate; (5) cuts and bruises from slitter knives and pull

rolls on or adjacent to slitter—care must be exercised; (6) hands caught in squeeze rolls—scrape all rolls from rear instead of from front; (7) takeoff men dropping platform from high stack, causing breakage, backstrain and mashed feet, as well as shock from noise—two men should take platform down if stack is high; when stack permits one man to handle platform, he should put one end to the ground and then lift other end down from the stack, keeping hands and feet in clear at all times; (8) cuts about hands from paper while taking sheets off end of corrugator or paster—in taking off sheets, grip same tight enough to keep them from slipping; (9) having loose clothing wrap around shafts and pull rolls—wear no aprons except when working at takeoff table; long sleeves should not be worn, or if necessary they must be securely buttoned; (10) turned ankles—care must be exercised when climbing into and out of trim boxes. Safety latch on double backer should be kept on at all times when working on cut-off or score machine. Do not pull trim from around shafts while machine is in motion. If sheet should jam under knife, do not attempt to correct while machine is in motion.

TRUCKING

Three hazards with their eliminations are listed briefly as follows: (1) sudden dropping of loads when truck is released may cause handle to be pulled out of trucker's hand with enough force to hit against load and bounce back to injure trucker—all our trucking is done with hand trucks; if cylinder is kept filled with oil, action referred to will be eliminated; when tripping truck, be sure handle is in upright position; (2) running into persons with trucks, empty platforms, or full loads—be sure path is clear; pull truck at all times instead of pushing same; (3) handle of truck slipping out of hands when load is being lifted, causing it to bump load, rebound and hit trucker—handles should be inspected regularly, and no covering of any kind put on them.

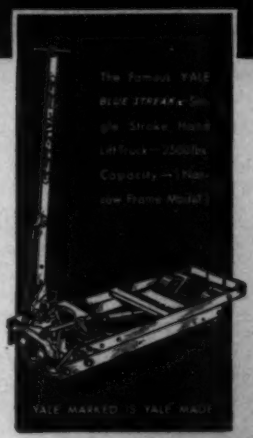
CUTTING DEPARTMENT

Ten hazards with their eliminations are listed briefly as follows: (1) cuts and bruises—do not use worn or broken wrenches; change nuts and bolts before they become rounded; (2) starting machine before everyone is in clear—motor should be cut off before entering machine and not started until everyone is in clear; (3) falls—catwalks and areas around machine should be kept clean and free of oil and inks; (4) mashed fingers and hands under feeder, pull rolls and printing rolls—keep hands away from feeder bar and rolls; be sure aprons on presses are lifted when running a large box; table under feeder at all times; keep hands in clear of lock when closing pressers; front pull rolls should be guarded to allow space enough only for a box to pass through; care must be exercised in adjusting ink fountains to keep feet from feeder bar; (5) if trucker is not careful, he may bump into machine feeder with load he is trying to spot at back of machine—feeder should face trucker when putting in a new load; (6) strained backs—hernia—men are cautioned to take part of strain on their legs by bending when lifting; if load is too heavy, help should be gotten; (7) cuts on face and hands, danger to eyes, etc., when score machine operators feed sheets through machine before helpers are in position to take off—operator should make sure his helper is ready to receive stock before feeding it through; (8) hazard of cutting an arm when removing back form rolls from printer slotter—new men must be cautioned and instructed how to guard against such hazards; (9) cuts and bruises to hands and arms in changing Seybold cutter knives and box saws—carriers are furnished for their safe carrying and they must be used; (10) band saws breaking and cutting operator—constant inspection and religiously changing of saws. Takeoff men should watch their eyes as there is hazard of silicate flying into them. All men should know location of switch boxes and latter should be plainly marked. Guards must be in place before starting a machine.

FINISHING DEPARTMENT

Eight hazards with their eliminations are listed briefly as follows: (1) table stackers mashing and cutting hands—stacker should not try to take too large a handful of boxes and should hold them securely; (2) cutting hands while changing tape on taping machines—no change should be made while motor is running; (3) sprained ankles due to tapers jumping down from machine—tapers are shown how to let themselves down to floor level with use of their hands and arms by coming to a sitting position

A Million Dollar PENCIL



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on table and then letting themselves down to floor level; (4) infection to hands from small cuts and chapped hands—glue from tape allowed to accumulate on hands together with cold water or cold weather tends to chap hands; girls are asked to wash their hands frequently and cold cream is kept in first aid room for their use; (5) tripping and falling—floors should be kept clean and clear of boxes, tape or spools; (6) running stitchers into fingers while stitching boxes—mechanical guards have prevented this happening; (7) cuts from ring knives—knives should be handled with care and taken off when leaving bundling tables; (8) loads falling on truckers—loads should be tied throughout to prevent falling, and stacked to a standard safe height.

SHIPPING DEPARTMENT

Two hazards with their eliminations are listed briefly as follows: (1) mashed fingers from closing and opening box car doors—use of a device to close and open doors that removes most of hazards; made up of chains and a small chain block; (2) mashed hands from car jack slipping while trying to spot a box car—all car jacks equipped with guard to protect hands in case of slip; heels of all car jacks are changed frequently.

MAINTENANCE

Here are the most hazardous occupations because so much of the work is done while machines are in motion, and necessarily so. This is also true of the oilers.

It is important that mechanics clean up after every repair job. They must be sure to replace all guards. They must know the location of every electric switch, steam valve, fire extinguisher, water main, hose house and sprinkler cut-off.

Goggles must be worn when using emery wheels, chipping steel, concrete, brick, or any material that may flake off and cause eye injury. Mushroom-head tools should be discarded long before they get into that condition.

High-top safety shoes should be worn and kept laced at all times; sparks from a welding torch might fall into shoes that are partly laced.

Our company strongly recommends physical examinations before hiring and at least an annual physical examination of all workers. Defects found by these examinations are followed up and parties involved convinced of importance of correcting them. It is made easy as possible for them to do so, either through changing of shifts, or advancement of money required.

DISCUSSION

Much interest was aroused over Mr. Bienvenu's paper. The question was put forth as to what sort of a list was given to mechanics in regard to hazards. The author illustrated what type of book was given. It was then asked if corrugator rolls, squeeze rolls and paper cutters were guarded. This question was answered in the affirmative on all three counts. Two members commented upon the value of Mr. Bienvenu's paper and congratulated him on it. Another question was raised as to the danger of silicosis. It was advocated that tests be given to find out how much silica there was in a plant. It was advised that inhalators and masks be used.

Advantages of Physical Examinations from the Viewpoint of the Personnel Director

LOUIS H. FRECHTLING, M. D., director, Department of Industrial Relations, The Champion Paper and Fiber Co., Hamilton (O.) Division

Common interest of the employer and the employee are definitely tied up in the physical condition of the employee and the kind of work the employer furnishes the employee.

The real job of the personnel man and the industrial physician is prevention. Physical examinations prevent spread of disease, keep persons with diseased conditions from going to work, prevent persons with physical handicaps from being put at hazardous work, and prevent the wrong placement of an employee. To the employee already on the job, physical examinations are valuable in that they discover threatened diseases early, whether they be contagious, acute, chronic or such as make the employee an accident hazard.

The physical examination should be adequate for the purpose for which you intend it and also should be a true appraisal of the physical and mental make-up of the individual. It should be made with the purpose of placing the applicant at work which he or she is best fitted to do.

Persons with congenital or acquired physical handicaps are looked upon by many as poor or undesirable workers. This, it is felt, is in error. These individuals often make excellent employees at the work they are able to do. All industries can assimilate some of this type of employee. One thing should be stressed concerning preemployment physical examinations, and that is that the applicant for work must be impressed in such a way as to gain the impression that what is being done is being done in a careful, thorough way and for his or her welfare.

The Medical Examiner can do more than others in placing an organization and its employee-employer relations before the incoming worker in its true light just because of this relationship.

It is reasonable to expect that reexaminations will be made more often in cases where employees are engaged in work which entails exposure to some hazard.

Most of our cases of tuberculosis of the lungs come to men and women between the ages of twenty and thirty years. Early recognition and proper treatment in such cases means much in the ultimate cure of the disease, not to mention that it removes from a group of employees a possible focus of general infection.

Examinations also will reveal an early nervous condition which may take on a myriad of forms. Early recognition here is of the greatest importance. In industrial relations, health is of the greatest importance, for it allows a normal, considerate, able solution of any of the problems that may arise.

Physical examinations may be advantageous to all parties in industry. Viewed and evaluated by the personnel director, they may be set down as his most valuable aid, aside from his own personality and his ability to understandingly and sympathetically treat with other employees.

DISCUSSION

Many interesting points of discussion were brought up at the conclusion of Dr. Frechtling's address. The first point was the question of hernia. The doctor, in order to clarify this important question, described the mechanics of hernia, how it is formed, etc., and added that in Ohio, hernias are considered a diseased condition—a congenital condition. The Industrial Compensation Act, in Ohio, compensates only when there is definite knowledge of a trauma to the wall. The doctor showed that if a man working at a cut-off saw or rip-saw has a piece kick back and strike him in the abdominal wall, that would be considered a hernia—a compensable hernia. However, it was said, in those cases where the hernia is incidental to the work that the person is doing, it is considered congenital and not compensable. The doctor brought out, in response to a query, that he would not hesitate putting a man to work who has a disposition to hernia if he could put him on a job where he knew he would have control over him. A member asked the doctor what he would do as far as physical examinations are concerned, when it comes to hiring people who are not big enough for some manual jobs but who have to work up through them to reach other jobs. The doctor again stressed the point that if there is no predilection to hernia, there probably is no hernia. He added that the ordinary man of 140 to 150 pounds can lift 100 pounds safely and regularly. The doctor stated that workmen are gradually losing their dislike of physical examinations. He also said that one should not seek a definite formulae to do things by but find out the principles behind it and the formulae would follow.

Designing Paper Mill Machinery for Safety and Production

M. WALTER DUNDORE,
Production Manager,
Beloit Iron Works, Beloit, Wis.

The first problem in designing for safety appears to be the development of a definite interest in accident prevention. Every employee is interested in proper design and use for many reasons, chiefly among which are his job and his ability to remain interested in it, his enjoyment in living, creating and recreating; and because improper design and use may mean the loss of his job, inability to produce, and pain and suffering.

Mills are not honest with themselves or their employees when they make the declaration that safety does not pay recurrent dividends on an accelerated scale. Too many examples from past experience reveal that employees in a safe plant produce a better product in greater volume than those same employees will produce under conditions conducive to recurrent accidents.

Very often when paper machines become obsolete or unsafe due to need for increased

speed or change in method of manufacture, the better procedure is to replace them with newer equipment designed for these requirements.

Anticipatory design is important. Shall designers for safety consider ultimate machine speeds of 2,000 or 3,000 feet per minute, or even higher for machines now being placed in operation? Are we in a race to arrive at a manufacturing speed for paper of a mile-a-minute? If so, certain principles will have to be taken into consideration now or in the very near future. Among a number of such engineering principles for safety are: (1) all equipment should be designed and adequately proportioned to insure minimum interruption and breakage of parts that might cause accidents under operating conditions involving heavy loads and high speeds; (2) equipment should be readily accessible for frequent and thorough inspection, maintenance and removal, and (3) designed for minimum manual and pedal dexterity.

A few applications of practical engineering are: (1) good lighting is an incentive to safe production of high quality; (2) no employee should be exposed to high voltages; (3) all circuits should be arranged for locking in the open position in event of repair work; (4) all steam pipes should be shielded; (5) well lighted subways should be provided under the machine, making it unnecessary to cross moving equipment; (6) all heavy equipment which requires moving for maintenance should be conspicuously marked for weight; (7) equipment should be kept from close proximity to the floor; (8) pits should be avoided wherever practical and feasible; (9) equipment causing unsafe operating conditions due to vibration from out-of-balance should be referred back to the manufacturer for correction; (10) assurance that safety devices are not and cannot be willfully made inoperative; (11) consult frequently with the builder in attempting to eliminate known operating hazards; (12) work with the machine builders to make certain that equipment surroundings will be safe; (13) that all mechanical, electrical, hydraulic, steam operated and pneumatic equipment are guarded for maximum safety; (14) dryers should be balanced at all times to maintain perfect draw and insure operators freedom from continuous manipulation.

Some of the major applications of safety principles that have been made in recent years are as follows:

The horizontal dual press is an answer to safety design over the conventional type of multiple press with its many felt wraps and roll nips;

The winder shaft puller and conveyor has safetyized the handling of finished product;

Mechanically dumping the full roll of paper has relieved the operators from heavy and dangerous work;

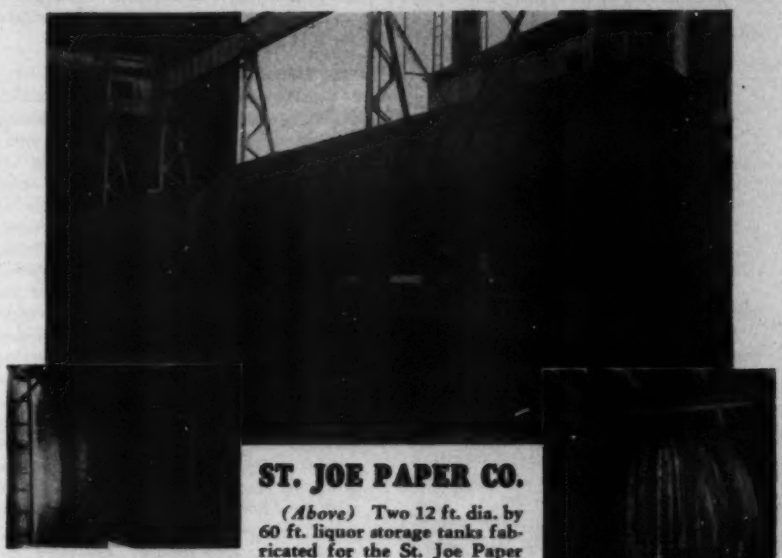
The overhead deckle lift, wire carriage, removable fourdrinier and cantilever couch rolls have made safe one type of wet end;

The suction drum press and couch has made safe the extraction of water over the conventional squeeze section;

Glued fourdrinier dryer felts have won immediate approval, due to lesser broke and breaks in the sheet;

Fully enclosed hypoid and spiral gear

Steel Tanks and Platework for the PAPER INDUSTRY



ST. JOE PAPER CO.

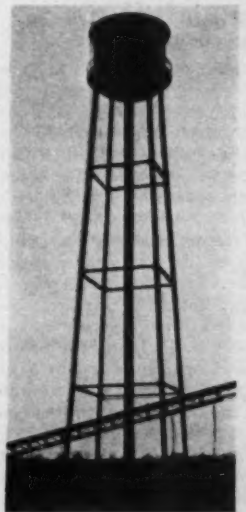
(Above) Two 12 ft. dia. by 60 ft. liquor storage tanks fabricated for the St. Joe Paper Co., Port St. Joe, Fla.

GULF STATES PAPER CO.

(Above) Two welded steel diffusers in the Tuscaloosa, Ala., plant of the Gulf States Paper Co.

MAINE SEABOARD PAPER COMPANY

(At right) These two views show the top and bottom of an 18 ft. by 50 ft. 6 in. sulphite digester at Bucksport, Me.



NORTH CAROLINA PULP COMPANY

(At left) 50,000-gal. Horton water tank used for sprinkler service at the North Carolina Pulp Co. mill, Plymouth, N. C.

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Los Angeles.....1469 Wm. Fox Bldg.
Chicago.....2441 Old Colony Bldg.
New York.....3330-165 Broadway Bldg.
Dallas.....1446 Liberty Bank Bldg.
San Francisco.....1017 Hallo Bldg.

Plants at Birmingham, Chicago and Greenville, Pa.

drives with smoothly designed clutches have made safe the back side of the modern machine;

Totally enclosed and lubricated chain drive for dryers has made safe the back side of the dryer section;

Electrically operated calender lifts make roll lifting and lowering a safer operation;

A new horizontal reel has been designed to transfer the sheet onto the reel spool by use of air, the reeling being made possible away from the calender stack, giving the operators more room for loading spools, keeping the operator away from clutch on revolving spool, and making it a simple and safe matter to get the finished roll away from the reel drum;

Sheehan rope carriers for dryers and presses have done much to reduce sheet transfer hazards;

Design of broke conveyors and broke doctor has eliminated many injuries to operating personnel.

Future engineering design for safety in papermaking is a worthy challenge to the manufacturer and machinery builder.

Safety Kinks

D. B. CHANT, Secretary-Engineer
Ontario Pulp and Paper Makers' Safety Ass'n, Toronto, Ont.

Personal protective equipment is not a "safety kink," nor can the multitude of things intended to prevent accidents by coming between one and one's violation of natural laws be called "safety kinks." These things are guards, safety devices, etc. It might be fairly accurate to say that "safety kinks" are merely the working tools used by everyone in the constant effort to give accident control a definite place in the daily routine of modern life at work, on the streets, in the schools or at home. A large assortment of tools is needed in order to accomplish the results sought.

Different situations call for different tools in producing good results in accident control. The greatest effectiveness can be achieved only when the tools chosen are suited to the requirements of the job to be done. A stunt or safety kink which works well in one plant or group sometimes fails to do the same in another. Safety kinks should have the common purpose of putting over to persons that accidents need not happen; that they can and should be prevented.

In one case, a plan was worked out whereby the plant manager required a special report from the department superintendent concerned in every case of disabling injury. The form of this report was such that the superintendent had to go on record as to the cause of the accident and to state just what he had done or proposed to do to prevent a similar accident. As a committee later investigated the accident, the cause given by the superintendent had to be in line with the facts and the manager personally bore down in a few instances where the report stated that no steps had been taken nor were they considered necessary. The improvement in accident prevention was startling.

So-called "safety sweepstakes" have proven useful in maintaining interest among the rank and file of employees. Prizes of moderate value, such as one or two days' leave with full pay to be drawn for by all workmen in a department or plant unit having gone for a certain period with no disabling injuries, furnish the extra incentive to arouse extra interest and this scheme has the further value of making safety the common objective of everyone in the group since one accident cancels the sweepstake for that particular period.

DISCUSSION

One member brought out that he felt the safety kink in the factory, is finding out where the hazard is and doing something about it. The member cited an example where large rolls of paper were handled, piled high and moved with an "inch bar." In moving the paper sometimes they were not straight, and the workmen always figured to get the bar centered as near as possible under the center of the roll. Once in a while, however, the weight of the top rows made it uneven and caused a switch in the roll. The operator moving in would not be able to get it and in one instance, the member stated, a young man was backed up against the wall and badly crushed. The "kink" in this instance, the speaker pointed out, would be to find out how that paper could have been moved with the elimination of the hazard. Various other safety points were brought out by this speaker. Another member mentioned the idea of using safety posters with a workman's plant number concealed in it. If the man saw the number within twenty-four hours and could point out the lesson in the poster he received a couple of theatre tickets.

Psychology of Dealing with Employees

HAROLD S. HULBERT, M. D.,
Psychiatrist, Chicago, Ill.

The largest unit group of people who can be alike in feeling is thirty or thirty-one. Much larger groups may learn alike or know alike but cannot feel—cannot be self or within-motivated alike. Authorities and students of the subject agree that when small groups are rewarded for group activity, every man is a shrewd judge of the competency of the others and for leadership can be trusted to select as the leader the one person who is best fitted for the post.

In safety work this group should be encouraged to select their own provisional leader. After they have selected their leader and he has served time in office it is quite all right to appoint his successor and to supply this leader and his successor with propaganda materials along the line of safety. Since the leader is going to supply the group with materials on safety why not call him a "librarian"? You can have deputy librarians but do not call them "inspectors." Do not call them by any title which will ally them to management.

I think that you should have a school for librarians and that you can send to that school those persons who are ambitious along safety lines—foremen, subforemen, straw bosses, junior supervisors, etc.

The leader should distribute safety ideas on loose-leaf—on separate pages—and the man should have a notebook in which he can file his ideas. The librarian should make absolutely sure that everyone in the squad knows what the others know about the safety text.

People tend to personalize attitudes. An officer on the ground, one who makes decisions, is the type of person workmen look up to. Junior officials should "think out loud." If a junior official sees one workman lift another on his shoulders to open a freight car door he should think out loud, namely, that shoulders are pretty convenient ways to climb up in the world but ladders are safer. When he comes over to the men he says, "You had better get a ladder to climb up to open that door. Company rules you know." He may never be scarcastic—just factual.

It is very fine to remember some little personal characteristic of the men you are trying to modify. It is always best to keep your best foot forward with these men—it is absolutely imperative that you do. You cannot tear down their respect for you.

In the pulp and paper mills you must anticipate every contingency to act in a safe way so that no one may accuse you of being the direct or the contributing cause of hurt.

Another psychological point is positive terms. The human mind does not handle negatives at all well, nor does it react well to fear. It is very foolish to talk in a "don't do this or don't do that" manner. After two weeks the subconscious mind becomes deaf to the negative if repeated often during that time. Use positive terms. It isn't wise to talk about accidents to persons. It may make them morbid. Fear is a poor whip to use on anybody with a mental age over nine and one-half. It predisposes to accidents. Instead of thinking broadly, they think narrowly. They don't see what is going on.

Another point is a false premise leads to disappointment. Every false relationship leads to disappointment; if people live long enough. Employees should be factually regarded as employees and should not be romantically regarded as "our boys" or "our sons." The company, instead of giving workmen bribes for transient loyalty—such as restaurants run at a loss—should give workmen wages. Wages are the true bond between industry and labor.

Confidence may not be safely placed in a man whose personal interests are in a lot of minority efforts or ideas. A person who is interested in a lot of minority efforts is not regular. A man interested in popular things such as free music, candid cameras, etc., is regular.

In safety instruction, or in any other effort in impressing onto other persons a composite of the factors of a new idea, it is well to bear in mind the memory ability of the human mind. The sum total of your safety sermon for a year should be made up of fourteen points. Say them over—use a different language—subheadings—illustrations.

Remember that:

1. Men remember what they do or say, or are led to do or say, better than they remember what is said to them or what is done to or for them.

2. Groups of thirty with an elected leader can feel alike and can act like a team.

3. Daily the leader or "librarian" of this group can give to each man one idea.

4. Officers lead by example. Talk quotably.

5. On everyone there is the duty to anticipate.

6. One basic law—"Do not hurt."

7. Paternalism is not a fact—it is romantic and fails.

8. Regulars, normal persons, are predictable.

9. The capacity of the human memory is fourteen points.

10. The world needs to be reminded as well as informed.

DISCUSSION

Several interesting points were brought out following Dr. Hulbert's talk. One member asked if there was not danger in a group of thirty or thirty-one selecting the best man for a job of the nature referred to by Dr. Hulbert. The point was made clear that the men select the first chairman after which the management can appoint one. The office should be started as an office of the workman, not the management. Another member referred to Dr. Hulbert's illustration of one worker lifting another on his shoulders and asked if the seriousness of this act should not be pointed out. The question was answered by the reiteration that pathology should not be brought to bear on a worker's mind, i. e., the men should think about safety not about accidents. Another point was that the men might come to work tired if they have too much time for things other than company work.

Review of the 1937-38 Accident Experience in the Paper and Pulp Section, N.S.C.

F. W. BRAUN,
Vice-president and Chief Engineer,
Employers Mutuals, Wausau, Wis.

Information about the circumstances and causes of 1937-1938 accidents is based on reports of 231 accidents occurring in paper and pulp mills and remanufacturing plants. These reports were submitted on a form embodying the recommendations of the Cause Committee of the American Standards Association. Details of the accident having no bearing on cause were unreported.

The reports were tabulated and summarized in accordance with the A. S. A. Cause Committee's Code. This is the first time that the Paper & Pulp Section has used this code in accident study in the industry.

Members of the Section were requested to furnish reports at the beginning of the year, and were again solicited during July. The analysis of the 231 reported accidents, which resulted in injuries ranging in severity from temporary disabilities to deaths, reveals the following information.

AGENCIES OF INJURY

The principal agency of injury was machinery, which figured in 30.8 per cent of all reported cases. Rolls, reels, and winders figured in 28 per cent of all machinery accidents. Paper machines and calenders accounted for 18 per cent of the machinery total. In 20 per cent of all the accidents, the agency can be described only as a working surface. These were principally floors, platforms, and ladders. Of the other agencies, hoisting apparatus, vehicles, and hand tools followed in importance.

TYPES OF ACCIDENTS

"Caught in or between" accidents exceeded other types, resulting in 34 per cent of all injuries. These accidents most often occurred when employees got their hands and fingers caught between moving parts of machinery. This is particularly true of accidents involving rolls, reels, and winders, on account of the nip hazard. Accidents described as "struck by falling, flying, sliding or moving objects" were next in importance, amounting to 22.9 per cent of all cases. Tools, rolls of paper, and shafts were objects often involved in accidents of this type.

Of the remaining types of accidents, "striking against" was the most important, figuring in 10.8 per cent of all injuries. Slips, falls from one level to another and falls on the same level occurred on floors, platforms and ladders.

UNSAFE ACTS OF THE INJURED

Unnecessary exposure to dangers describes the principal unsafe acts of employees. Improper gripping, holding, and lifting of objects contributed to 10 per cent of all injuries and was the most important single unsafe act. Tools and materials that fell from the hands were usually of this type. Unsafe positions or postures and unsafe practices in handling materials unsafely were frequently reported. For example, the second most important unsafe practice was the unnecessary exposure of the legs or feet to danger from materials being lifted. Standing under suspended loads was assigned as a cause in over 5 per cent of the cases. Of other types of unsafe acts, only "working on equipment that is in motion" ranked in importance with the unsafe acts that result in self exposure to injury.

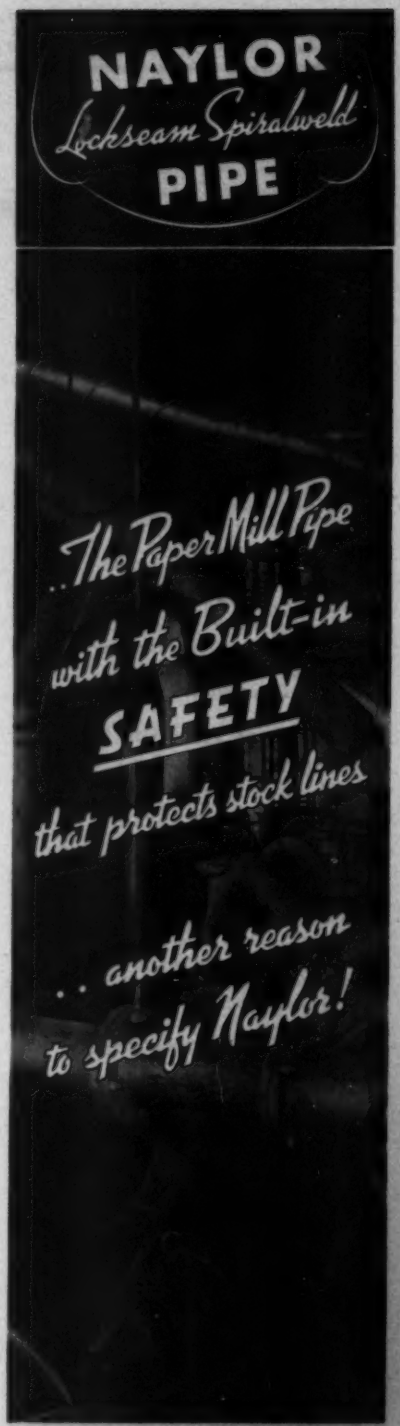
One of the most frequent unsafe acts involved in accidents connected with the operation of rolls and reels, was working on them while in motion. Another was the improper use of the hands in feeling for wrinkles in paper. Unsafe use of air hoses and unsafe cleaning tools were other acts frequently mentioned.

MECHANICAL CAUSES OF ACCIDENTS

Unsafe processes was assigned to 14 per cent of all cases and was the leading mechanical cause of accidents. Bad operating conditions in and around rolls, for example, were usually assigned to this cause. Where, however, a guard would have been possible the accident was ascribed to "unguarded." Including other types of equipment, lack of guards figured in 12 per cent of all injuries. A second helper on a new printer slotter, for example, suffered an injury to his hand, largely due to failure of the manufacturer to provide a guard for the front pull roll.

Ranking third among the mechanical causes were decayed, worn, and broken machines, tools, and other agencies, which were assigned to 10 per cent of the total injuries. An electrician, for example, used a ladder equipped with safety shoes on

(*Concluded on page* 894.)



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NEW EQUIPMENT AND SUPPLIES

Leather Belting Development

A between-the-ply brandmark is being used on double leather belts by the Chicago Belting Company, 128 North Green Street, Chicago, Illinois. The brandmark is printed on the inside of each such belt as the

double belt goes through the tension cementing machine where its two plies are cemented together under tension to eliminate belt stretch. Such printing is claimed to be permanent and includes the name of the maker of the belt and the month and year of its manufacture.

Acoustical Tiles for Telephone Booths

An acoustical tile, 12 in. square, 1¼ in. thick, and pierced with hundreds of ⅛ in. diameter holes, has been announced by the Celotex Corporation, Chicago, Ill., for application as a lining to any telephone booth or for placement on the wall and baffle boards around wall-type public telephones. The holes in the tile are said to "soak up" the sound waves striking them, thus establishing a quiet environment that permits conversation undisturbed by outside noise.

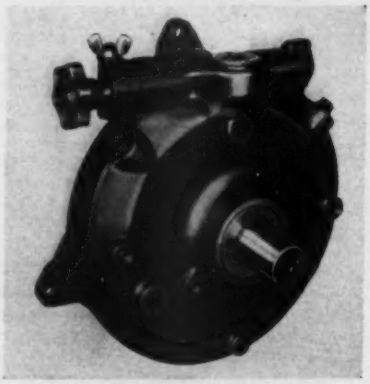
Tractor and Fire Pump Combination

Clark Tructractor Company, Battle Creek, Michigan, has announced a tractor and fire pump combination for emergency fire protection that consists of a Clarktor-6 Tructractor and a centrifugal type fire pump

that meets all test requirements of the National Board of Fire Underwriters. The pump is installed on the front end of the tractor, behind the bumper plate. A floating, flexible drive between motor and pump is provided by a patented power take-off. An automatic primer primes the pump and keeps it primed by means of a vacuum from the motor intake manifold. The pump is effective not only when drawing from a hydrant but from such sources of supply as a pond, creek, cistern or reservoir. When taking supply through a 4-in. suction opening from a 30-lb. hydrant, it will deliver 400 g.p.m. at 120 lb. pressure with the motor running 1800 r.p.m., its normal controlled speed when operating the tractor. Pump capacity and speed may be increased by adjusting the motor governor. The tractor power plant consists of a 46 hp., 6 cylinder engine, equipped with air cleaner and renewable cartridge type oil filter.

Variable Speed Control Unit

A self-contained variable speed control unit, made either right or left hand, has been announced by Morse Chain Company, Ithaca, N. Y. It is a positive mechanism for governing the speed of output shafts through an infinite number of variations within the range of the unit. The input shaft is constructed with integral cam. Oper-



ating against this cam are rollers which transmit driving action through links to three Morse high torque clutches. The clutches operate, with a ratcheting movement, rotating pinion gears which in turn drive a mating gear that is integral with low speed shaft. Clutches and main shafts are mounted on needle bearings.

Coating for Cement Surfaces

The Truscon Laboratories, Detroit, Michigan, has announced the development of a coating for the coloring and dustproofing of concrete floors or any other cement surface as well as porous tile. The product, designated as Truscon Flor-Dye System, includes a penetrating color which seals the pores and acts as a binder to stop sanding or dusting, and a dressing (in color) which is applied as the finish coat to fix the primary coating and to protect it from wear. Standard colors for this product are tile red, Spanish green, light brown, and dark brown. The manufacturer states that this product becomes an integral part of the cement surface; that it is oil-proof, sun resisting, and generally stain-proof; and with proper maintenance it will last years.

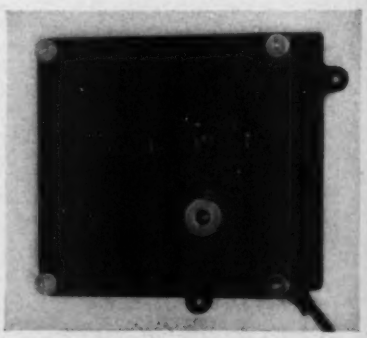
Self-Supporting Pillar Jib-Crane

The Harnischfeger Corporation, 4400 W. National Avenue, Milwaukee, Wisconsin, has developed a self-supporting pillar jib-crane for work in side bays, low headroom areas, and other confined spaces where over-

head traveling crane or hoist service is not available or practical. This jib-crane, with jib-arm swinging on roller bearings, is built in capacities up to 5 tons, heights up to 20 feet, and to a maximum radius of 20 feet. It may be furnished with either pendant rope or push button control on the hoist; or with push button Master Variable Speed Controller which controls all lifting, lowering and traveling operations.

Air-Operated Cycle Controller

A new single cam cycle controller that provides for the control of as many as four separate process operations has been announced by The Bristol Company, Waterbury, Conn. The cam of the instrument is designed to be cut so that it will meet a wide variety of requirements. Additional flexibility is provided through the use of adjustable segments. The instrument also has a special operating mechanism which makes it possible to obtain two different speeds of rotation before the cam completes



a cycle. It likewise is equipped with a patented three-way leakless pilot valve which eliminates the need for a fixed air leak at the controller. The instrument case is both moisture-proof and dust-proof; and the switches that control the electrical circuits in the controller are enclosed, as is the motor.

Lenses For Welding And Cutters

Mine Safety Appliances Company, Braddock, Thomas and Mead Streets, Pittsburgh, Pa., has announced a coated cover glass for lens use by welders and cutters. The glass is available in standard 2¼ by 4⅛ in. plates and in 50 mm. round lenses. It also may be cut to size required for grinding wheel guards, special helmets and goggles, the maximum area available being 10 in. by 10 in. The manufacturer claims that this glass positively prevents molten sparks from fusing to its surface and that it will outlast 10 to 50 plain lenses.

Oil and Water Extractor

An oil and water extractor for compressed air lines has been announced by the Spray Engineering Company, 169 Central Street, Somerville, Massachusetts. Elimination of moisture and free oil is obtained by the cooling effect of a small volume of circulating water passing through a cooling coil, by a reduction in the air velocity through the extractor, and by changes in the direction of air flow. Oil and water are collected on a series of baffles in the air stream, deposited in a reservoir at the bottom of the extractor shell, and automatically drained off. The extractor is available in sizes for 40 and 100 c.f.m. Larger capacities are provided by multiple units.

Floor Truck

Lewis-Shepard Company, 245 Walnut Street, Watertown, Mass., has announced the development of a floor truck with arc welded steel frame, hardwood top with wood inserted into double side girders without bolts, "T" type steel and protection, casters hung on four steel arch sections, main wheels suspended on bridge type hanger, axles easily removable and reinforced by means of a tubular axle housing, removable push bar, and with Hyatt roller bearings in all wheels. The wheels may be all metal or tired with solid rubber or pneumatic tires. Standard capacities for the truck are from 1,000 to 4,000 lb.

Paper Coating Material

A coating material which possesses a high degree of resistance to moisture transfer, excellent gloss, and good antiblocking characteristics has been announced by the Goodyear Tire and Rubber Company, Akron, Ohio, as a development of its laboratories. This material, known as Pliolite, is a resin which is derived synthetically from pale crepe rubber. Properly formulated solutions of the resin in various solvents, such as gasoline, toluol, and carbon tetrachloride, may be used for coating glassine paper, label stock, cardboard, and the like. Application may be made by dipping, roller coating, or spraying.

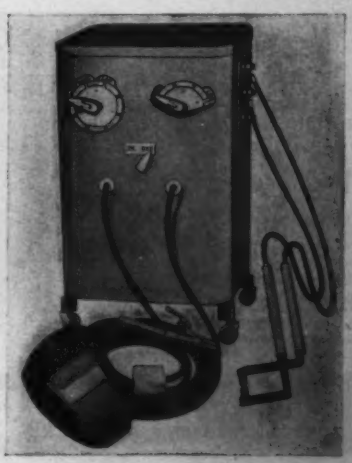
Portable Voltage Transformers

A voltage transformer, designed for 115 volts secondary and for use with portable instruments and recorders, has been announced by Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. This transformer,

designated as the Westinghouse PV-130 portable voltage transformer, is available in two sizes—a small size for primary voltages up to 2300 volts, and a larger size for primary voltages from 2300 to 6900 volts. The small size measures 5¾ in. by 7 1/16 in. by 7¼ in.—the larger size, 7¾ in. by 9 3/16 in. by 9⅛ in. Among other features of design are: shell type construction, terminals mounted on clearly marked terminal block which forms top panel on transformer, and primary and secondary terminals of bare polished nickel.

Combination Arc and Spot Welder

Miller Electric Mfg. Co., Appleton, Wis., has announced a combination arc and spot welder which has been produced by building a spot welder into its regular No. 2 and No. 3 welders. The No. 2 welder has a



capacity of 165 amperes; the No. 3 welder, 220 amperes. These units, designed to provide arc welders of ample capacity to handle electrodes from 1/16 in. to ¼ in., have 32 heat controls. The spot welder itself has a number of heat controls for different thicknesses of metal. Special spot welding tongs are made in different styles to handle individual applications. This combination arc and spot welder is patented in the United States.

Welding Electrodes In Vacuum Packed Cans

Harnischfeger Corporation, 4400 W. National Avenue, Milwaukee, Wisconsin, has announced the packaging of its Smootharc welding electrodes in vacuum packed, orange and black colored cans. Contents of such cans, according to the manufacturer, remain in oven fresh condition regardless of degree of moisture present in subsequent storage facilities. These containers, with size and type of electrode clearly marked on each, can be stacked easily for storage. They also can be opened quickly and easily through the use of a key which is attached to one end of each of them.

Particle Sizer

An apparatus to measure particle sizes below 325 mesh and designated as the Palo-Travis particle sizer has been announced by Colloid Equipment Co., Inc., 50 Church Street, New York, N. Y. The sizer consists of a large glass tube mounted on a support of polished oak. A mixing chamber to hold sample is separated from the large tube by a stopcock; while a sedimentation measuring tube, flat bottomed and graduated in millimeters, is supported by a rubber stopper at base of large tube. A micrometer eyepiece, mounted to the left of the sedimentation measuring tube, permits sedimentation heights to be measured in fractions of a millimeter. To the right of the sedimentation measuring tube is a small electric tapper, and to the right of that, an illuminating unit to make readings easy. An electric stopclock is supplied on all instruments to be used on 110 volts, A. C., 60 cycles current. Instruments to be operated on other currents are furnished with stopwatch.

In using this instrument, only one observation is necessary—the reading height of sediment in small tube at definite intervals. From these values, radius and size of particles are calculated.

TECHNICAL DEVELOPMENTS

The following abstracts are of the latest developments found in the foreign press.

Alkali Losses in Sulphate Mills

The author has found that 20-90 kg. of sodium sulphate per ton of pulp was lost in the smoke and gases from the soda-recovery departments. In sulphate plants with rotary burners, the loss was 20-70 kg.; and in spraying furnaces, 40-90 kg. were lost. General operating conditions and furnace construction are responsible for the loss of alkali in the gases. In the black liquor about 60 per cent of the alkali is organically bound, the remainder is present as NaOH, Na_2CO_3, Na_2S, Na_2SO_3 and Na_2SO_4. When burning takes place, the alkali in the organic compounds is converted into Na_2CO_3, while the sulphur in these compounds forms SO_2, which escapes in the gases. Na_2CO_3 and Na_2SO_4 remain unchanged, but Na_2S and Na_2SO_3 are changed to sulphate (or carbonate). Studying the oxidation of various samples of Na_2SO_3 and Na_2S, the author noted the temperatures, the amounts of air and Co_2 used, and the resulting residual amounts of Na_2S, Na_2SO_3, Na_2SO_4, Na_2CO_3 and SO_2. Using these data, he constructed vapor pressure curves for NaOH, NaCl, Na_2CO_3, and Na_2SO_4. He has also constructed curves indicating that alkali losses in the smoke and gases are a function of the temperature and carbon-dioxide content. A discussion is given regarding various devices for alkali recovery from such gases. H. Liander. Svensk Papperstidn. 41, 267-71 (1938) through C. A. 32, 8136-7 (1938).

Neutral Salt Solutions of Cellulose

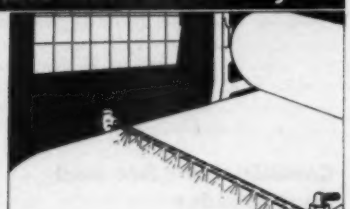
Calcium thiocyanate causes marked swelling of filter paper below concentrations of 52 per cent above this concentration peptization occurs. For solutions having the same cellulose content, but where the $Ca(CNS)_2$ concentrations differ, the concentration coefficient of the relative (or specific) viscosity is high at 40 deg. C. Nearly constant viscosity values are reached above 60 deg. C. When the cellulose content is varied, and the salt concentration remains fixed, the increase in viscosity does not run parallel to the increased cellulose content. A maximum viscosity is reached with lower concentrations of cellulose. At increased temperatures, when heating is extended over long time periods, there is a decrease in viscosity and the solutions become yellow. This is the beginning of cellulose decomposition. A viscosity increase results from ageing of cellulose. The cellulose—$Ca(CNS)_2$ solutions were subjected to various precipitating agents. Ethanol and acetone have a greater precipitating effect than has water. The viscosity of the solution passes a maximum on the addition of small amounts of ethanol. The viscosity curves of cellulose in cuprammonium are quite similar to those in calcium thiocyanate solution. The amounts of calcium held by the cellulose was shown by analysis of ultra-filtration of thiocyanate solutions. $CaCl_2$ does not dissolve cellulose; $Ca(NO_3)_2$ has a very slight solvent action. The following also have some solvent action on filter paper: $Al(CNS)_3$, $AlCl_3$, $ZnCl_2$, NaCNS, $K_2(HgI_4)$ and mixtures of ($HgCl_2$ and NaCl). The action of $Ca(CNS)_2$ on cotton linters is that of a swelling agent, but solution does not occur. A study was also made of the action of organic materials on filter paper. Most of them had no effect, but some (not listed in the abstract) tended to decompose the cellulose. H. Ebring and H. Geinitz. Kolloid-Z. 84, 25-42 (1938) through C. A. 32, 7719 (1938).

Chlorination of Plant Tissues

These are very extensive studies on the chlorination of spruce, beech and wheat straw, with a view towards finding a pre-treatment (prior to chlorination) that would decrease materially the chlorine consumption. The results are tabulated and the original article must be consulted for details. However, a large portion of the chlorine consumed appears to be due to the non-lignin components of wood and straw. In spruce, the ratio of chlorine required by carbohydrates to that used up by the lignin was 1:1; in beech it was 3:2, and in the case of straw it was 2:1. A series of experiments on straw show that there are two general methods of attack in pre-treatment. Either a water extraction is made at 100 deg. followed by another aqueous extraction at 180 deg., or else the preliminary water extraction at 100 deg. is followed by extraction with 0.1% HCl or 0.5% H_2SO_4 (also at 100 deg. C.). This is then followed successively by a 3 hour chlorination, washing, and beating for 1-2 hours with 1-2% NaOH, and a mild bleach. The total saving in time and in chlorine is very marked. The pulp (41-43% yield) contains 85-90% alpha cellulose. In general about 22-23% Cl, 10-15% NaOH (both based on the weight of dry straw) were required. This, however, appears uneconomical. Further savings in Cl and NaOH are effected by the use of 81% alcohol and 0.1-0.5% HCl in treatment prior to chlorination. Here the percentage Cl and NaOH (based on dry straw) was at best 13.45 and 12%, respectively. The pulp yield was then 40% (with 90.7% alpha cellulose). The Pomilio process (i. e., aqueous alkaline treatment prior to pulping) gave somewhat higher pulp yields (with lower alpha cellu-

How To Operate Paper Mills More Profitably

NO



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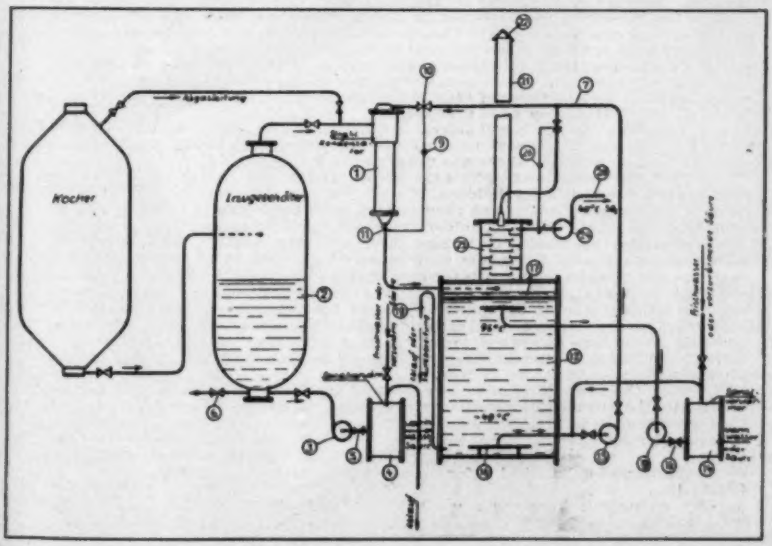
lose), but effected considerable saving in chlorine. This process appears to be the most economical, but it seems questionable to the authors whether any of the present day chlorination methods can normally compete with other methods of delignification. The article includes a critical evaluation of the Pomilio process. O. A. Müller and F. Stalder. Papier-Fabr. 36 (Tech.-Wiss. Tl.) 405-11 (1938).

Power and Heat Economy in the Pulp Industry

Recent developments show that in the production of chemical pulp heat requirements have been considerably reduced, and that the energy derived from steam may be used more advantageously than heretofore. The author has given a well illustrated resumé (without, however, giving literature references). He discusses heat requirements in indirect cooking in rotary digesters, and the advantages from the standpoint of energy consumed, heat accumulators, heat recovery system and various techniques in preheating cooking liquors. A part of the exposition is theoretical, and there are 13 illustrations, only one of which is reproduced herewith; i. e., the heat recovery system of Rosenblad. On relieving the digester gases, SO_2 and water vapor are led into the radiating condenser (1). The cooling liquid is led to (1) through (7) and the temperature of the mixed condensate (which retains very little SO_2) is kept at 95 deg. C. through the action of temperature regulators (9) and (10), and (11). The hot condensate is brought tangentially into the accumulator (12) and is pumped by means of (13) into the spiral pre-heater (14). The non-condensed gases (SO_2) are led from the upper part of the accumulator through a counter-current condenser (25?) and then cooled to 40 deg. C. [through the blower (24)] and led into the acid tower or compressed into a gas holder. The cooling liquid (at 40 deg. C.), which flows through line (7) is automatically regulated in amount through (26?).* The cooled condensate in the spiral pre-heater (14) is led into the lower part of the accumulator from which it is removed by suction pump and is distributed as cooling liquid to the radiating condenser or the counter-current condenser as required. In order to prevent a mixture of hot and cold condensate in (12), wooden devices (16) and (17) are built into (12). Valve (18) regulates the flow of the condensate into the pre-heater (14). The overflow passes through line (19). Excess pressure in the accumulator is prevented by the stack (21), the cover (22) of which can open automatically. The liquor is drained through the lower valve of the digester (Kocher) into the liquor reservoir (2), which is often constructed of wood. From this the liquor is pumped continuously [through pump (3)] into the spiral pre-heater (4). Deposits accumulating in (2) are drawn off through (6). Liquor which vaporizes and SO_2 are led into (1). The hot condensate (at 95 deg. C.) serves to pre-heat the acid liquor. The construction is relatively cheap. The author discusses this, and other systems in some detail, as well as viewpoints regarding the amounts of energy that may be produced through counter-pressure. Rudolph Mehlo. Papier-Fabr. 36 (Tech-Wiss. Tl.) 397-404 (1938).



Abstractor's note—a different numbering is assigned in the original text wherever question marks are inserted. However, these appear to be errors.

Comparison of Various Woods in Mechanical Pulp Manufacture

These are two articles dealing with raw materials available in Germany. The first deals with ordinary groundwood, the second with steamed mechanical pulp. The former is preceded by a thorough literature review. The initial investigation involved an orientating comparison, under identical conditions of grinding, of spruce and Scots-pine. Both wood samples were about 75 years old, felled under similar conditions, and dried for three years prior to grinding. Under the conditions of pulping (in three series of experiments, in which a natural

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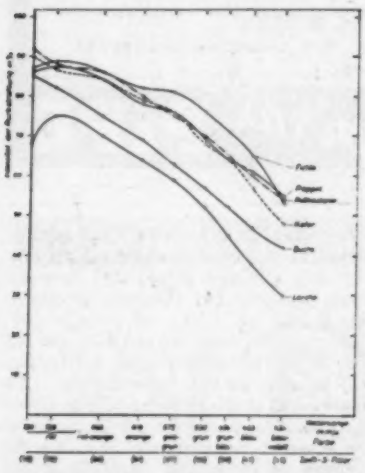
pulpstone burred differently in two cases, and an artificial Carborundum stone was used), the actual weight of pine pulp was kg. bone-dry material per 24 hours) was somewhat higher (5-19%) than with spruce. Water drains more readily from pine than from spruce pulp, but the test sheets from pine were usually weaker [especially in tear length, bursting strength (except where the Carborundum stone was used), and "tearing-through" test (expressed in cm.g/cm. according to Brecht-Inset)]. Furthermore, the pine pulp sheets had a lower degree of whiteness. The authors make the observation that only one wood sample of pine was used. In a subsequent series of experiments, comparative data were obtained under strictly comparable conditions with larch, poplar, beech and horsechestnut. Here only the artificial pulpstone was used. The highest yields in kg./24 hours were obtained from poplar, followed by beech. Larch has distinct possibilities, giving a sheet comparable in strength with that of spruce (in most tests), but having a low degree of whiteness. All of these experiments are purely orientating and cannot be used in generalizations. The illustration shows the color curves for the



different mechanical pulp sheets, using nine color filters and thus plotting definite wave lengths (Wellenlänge milli-microns) in the visible spectrum, against definite reflection intensities (Intensitat der Rückstrahlung in %). In this case the Zeiss Spectralfilter (S-Filter) was used in the sphere reflectometer in connection with the Pulfrich photometer. In this figure Fichte=spruce, Pappel=poplar, Rosskastanie=horsechestnut, Kiefer=pine, Buche=beech, and Lärche=larch. The latter shows the lowest reflection intensity. In the second paper, orientating experiments were carried out with the same woods, which had been subjected to steaming under carefully standardized conditions, prior to grinding. Presteaming regularly gave rise to a saving in power requirements; i. e., more pulp resulted per kilowatt hour. (The one exception was poplar, but the difference between unsteamed and steamed wood was insignificant.) The most marked saving was shown in the case of horsechestnut. Steaming in general led to marked improvement in the tensile strength of the pulp sheets. This was especially marked in the case of the beech and poplar, which, when ground without steaming gave weak sheets, but when subjected to pre-steaming yielded test sheets which in tear length and bursting strength actually exceeded spruce and pine. In general, the pre-steamed hardwood pulps were darker than those derived from the conifers. W. Brecht, H. Schröter, and R. Süttinger. Papier-Fabr. (Tech-Wiss. Teil) 36, 413-20 (1938).

Permanganate Number Applied to Eucalyptus Sulphate Pulp

The permanganate number as well as the chlorine number seem to measure the residual lignin plus the matter in pulp that is soluble in boiling 0.5% NaOH. Of the two, the permanganate number is the more accurate and furnishes a rapid control method of determining the degree of cooking. However, it does not replace the lignin determination. The permanganate method is carried out as follows: air-dried pulp corresponding to 1 gram of bone dry material is stirred with a mixture of 180 cc. water and 20 cc. sulphuric acid, at 500 r.p.m. and at 25 deg. C. Subsequently 50 cc. of 0.1 *N* potassium permanganate are added, and the stirring continued for exactly 5 minutes, at the end of which the reaction is halted by addition of ferrous ammonium sulphate (50 cc. of 0.1 *N* solution containing 100 cc. of concentrated H_2SO_4 per liter). The colorless solution is titrated back with permanganate to a pink color. The permanganate number is the number of cc. of 0.1 *N* $KMnO_4$ consumed. The article gives the results of a thorough investigation regarding the effect of temperature, rate of stirring, time, rate of titration, amount of pulp used, and the volume of $KMnO_4$ added.

For any weight of pulp, it is possible to obtain reproducible $KMnO_4$ numbers where the ratio of $KMnO_4$ added to $KMnO_4$ consumed is 5 to 2. The volume ratio of $KMnO_4$ solution to H_2SO_4 to H_2O must be maintained at 5:2:18. The relationship of this modified procedure to the Oestrand method is given. P. B. Edwards and A. W. Mackney. J. Council Sci. Ind. Research 11, 185—200 (1938) through C. A. 32, 6457 (1938).

Magno Method for Treating Water

This descriptive article deals with the use of a partially calcined German dolomite, which is termed the magno-mass. It serves as a filter medium, and has been so heated that the magnesium carbonate has been converted into MgO while the calcium carbonate remains virtually intact. The properties of this material are also described. A. F. Meyer. Wochvl. Papier-Fabr. 69 (Tech 8Tl) 607-9 (1938).

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933

Of The Paper Industry and Paper World, published monthly at Chicago, Illinois, for October 1, 1938:

State of Illinois, County of Cook, ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Edward B. Fritz, who, having been duly sworn according to law, deposes and says that he is the owner and publisher of "The Paper Industry and Paper World" and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Edward B. Fritz, 333 N. Michigan Ave., Chicago, Ill.; Editor, Besse Merrithew, 333 N. Michigan Ave., Chicago, Ill.; Managing Editor, Harry E. Weston, 333 N. Michigan Ave., Chicago, Ill.; Business Manager, Edward B. Fritz, 333 N. Michigan Ave., Chicago, Ill.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) Edward B. Fritz, 333 N. Michigan Ave., Chicago, Ill.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

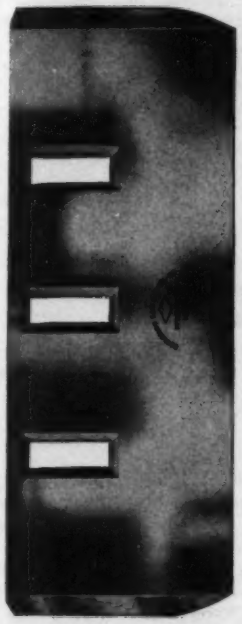
5. That the average number of copies of each issue of this publication sold or distributed through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is ..... (This information is required from daily publications only.)

EDWARD B. FRITZ,

Sworn to and subscribed before me this 26th day of September, 1938.

[SEAL] JANE A. DeWITT.

(My commission expires August 1, 1940.)



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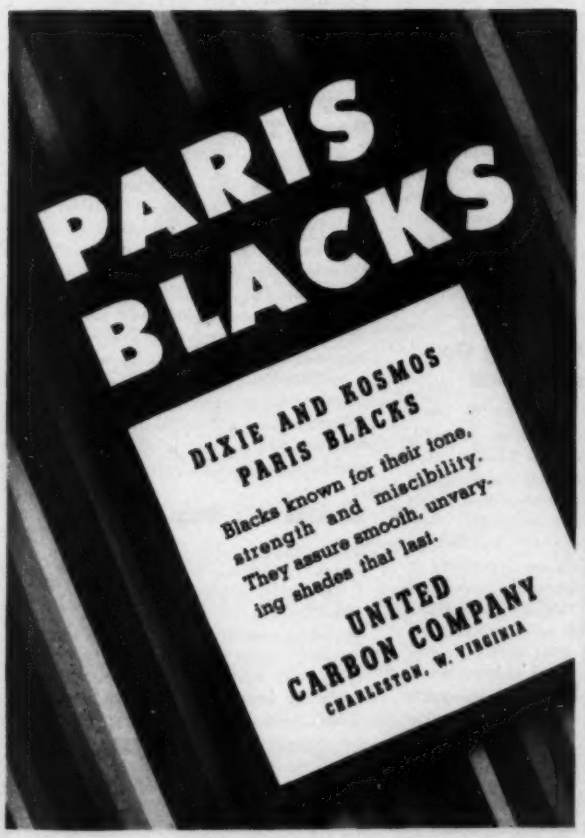

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PAPERMAKING PATENTS

IN THE UNITED STATES — Compiled by James Atkins, Registered Patent Attorney

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Drier Felt

Patent No. 2,115,658. Benjamin L. Whittier, Ruxton, Md., assignor to Mt. Vernon-Woodberry Mills, Inc., Baltimore, Md., a corporation of Maryland. Application July 1, 1937, Serial No. 151,487. 5 claims. (Cl. 139—420). This invention particularly relates to a belting, webbing, or the like, to be used in paper manufacturing plants, or the like, as a guide or conveyor belt, commonly known as a drier felt, for wet newly formed paper passing through the drier machines coming in contact with a series of heated drying drums. The invention contemplates the provision of a drier felt of a three-ply or multi-ply construction mainly consisting of cotton but with an asbestos strand interspersed periodically between the cotton strands to withstand excessive heat and to form a binder for the cotton strands or fibers.

Method of Bleaching Pulp or Paper Webs

Patent No. 2,125,634. Clark Cable Heritage, Rumford, Maine, assignor to Oxford Paper Company, a corporation of Maine. Application March 29, 1937, Serial No. 133,647. 12 Claims. (Cl. 8—2). In the manufacture of a web of pulp or paper in which the web is dried by being passed through a heat drier, the improvement which comprises preparing a solution of hydrogen peroxide and applying the solution thus prepared to at least one side of the web at a point in advance of the dry end of the drier whereby the heat of at least a portion of the drier is utilized to render the hydrogen peroxide active to bleach the web.

Method and Apparatus for Winding Paper

Patent No. 2,130,332. Charles Davis, Piedmont, W. Va., assignor to West Virginia Pulp and Paper Company, New York, N. Y., a corporation of Delaware. Application December 1, 1936, Serial No. 113,583. 8 Claims. (Cl. 242—55). The method of winding a web of paper and the like in a manner to prevent the building up of ridges due to superimposed minute irregularities in the thickness of the paper such as arise from its manufacture on a paper making machine, which irregularities run longitudinally of the web, consisting in oscillating said web in its own plane while the same is moving, passing the same between edge trimmers of a fixed distance apart less than the width of the web, and winding the trimmed web, the amount of the oscillation being less than the distance of the trimmer from the edge of the untrimmed web adjacent thereto.

A web-roll-supporting structure comprising a web-roll-shaft; means to induce periodic co-axial oscillation of said shaft; and manually operable means to effect adjustments of said shaft lengthwise and transversely, independently of said periodic oscillation thereof, and during said oscillatory movement.

Method of and Machine for Drying or Conditioning Webs of Paper and the Like

Patent No. 2,130,665. Donald B. Bradner, Hamilton, Ohio, assignor to The Champion Paper and Fibre Company, Hamilton, Ohio, a corporation of Ohio. Application September 18, 1935, Serial No. 41,171. 14 Claims. (Cl. 34—48). Method of conditioning webs which comprises passing air at high velocity over one side of the web, supporting this side of the web on a foraminous carrier and holding the web against the carrier by maintaining the static pressure of the high velocity air adjacent thereto substantially uniformly just below the pressure on the opposite side of the web.

Paper Machine

Patent No. 2,131,754. Albert Richards, Gladstone, Oreg. Application September 28, 1937, Serial No. 166,184. 1 Claim. (Cl. 34—48). An attachment for the drums of paper making machines of the type having rope grooves, said attachment consisting of an arcuate plate adapted to be secured to the rope groove end of a drum and having at its outer edge, an outwardly extending flange in spaced relation to the adjacent end of the drum and projecting in a direction radially with respect to the drum beyond the periphery of the drum to catch a rope displaced from the rope groove of the drum.

Apparatus for Making Up Batches of Paper Stock

Patent No. 2,132,874. Charles W. Morden, Portland, Oreg. Application June 18, 1935, Serial No. 27,225. 12 Claims. (Cl. 92—46). In an apparatus of the character described for making up batches of flowable material, a batch make-up receptacle, a receiving receptacle, means for transferring the contents of said make-up receptacle to said receiving receptacle, a float in said receiving receptacle, a vertical pipe carried by said float thru which said receiving receptacle discharges, an inlet orifice in said pipe located a predetermined distance below said float, whereby said receiving receptacle will discharge thru said orifice in said pipe at constant pressure.

In an apparatus of the character described including a make-up receptacle for making up paper stock comprising various ingredients, a means for introducing measured quantities of material into said make-up receptacle, said means comprising a rockable member including a spout, a dipper carried by said rockable member and discharging into said spout, a supply tank into which said dipper is lowered, said dipper having a filling and drainage slot in one side, and said dipper being adjustable on said rockable member so as to vary the discharge therefrom, from a partial to the complete emptying thereof, and means for controlling the movement of said rockable member.

Apparatus for Chlorinating Pulp

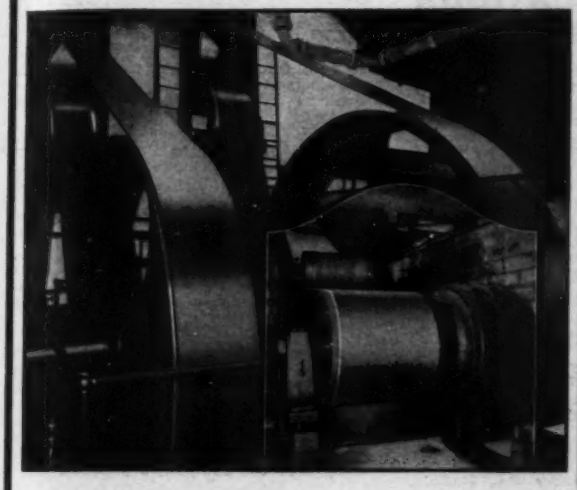
Patent No. 2,130,402. Clinton K. Textor, Cloquet, Minn., assignor to The Northwest Paper Company, Cloquet, Minn., a corporation of Minnesota. Application December 11, 1935, Serial No. 53,886. 2 Claims. (Cl. 261—93). Apparatus for treating liquid and pulp slurries with gas comprising a vessel, a vertical tubular shell within said vessel open at the top and bottom to liquid in said vessel for circuitous flow of liquid through said shell, means providing an annular constriction in the passage-way through said shell adjacent the upper end providing a reaction chamber below said constriction, propelling means located in and substantially filling the opening of said constriction for circulating the liquid, the opening of said constriction and the size of the propelling means being such that operation of the propelling means creates a velocity of the slurry at said constriction which prevents gas rising through said constriction and means for discharging gas into said reaction chamber below said propelling means.

Applicator Means for Paper Tube Winders

Patent No. 2,132,239. John K. M. Harrison, Ogontz, Pa. Application March 20, 1936, Serial No. 69,806. 12 Claims. (Cl. 91—51). In winders for paper tubes and the like, the combination with the mandrel on which the tube is formed, of a driven applicator roll projecting slightly beyond the circumferential confines of said mandrel and adapted to apply a thermoplastic coating to the interior surface of said tube incidental to its production, an electric heater below the applicator roll, and a thermocontrol means associated with said heater whereby the coating is maintained at the requisite fluency for application.

Beater for Paper Stock

Patent No. 2,129,789. Charles R. Seaborne, Appleton, Wis. Application April 3, 1936, Serial No. 72,509. 10 Claims. (Cl. 92—23). A machine of the character described comprising a bowl open at its top and bottom and having its bottom provided with beater knives, a rotatable plate extending beneath and closing the bottom of said bowl, said plate having better knives for cooperating with the beater knives of the bowl, and at least one scraper knife supported upon said bowl adjacent said rotary plate for preventing clogging of said knives during use of said machine.



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New Catalogues and Publications

Allis-Chalmers Manufacturing Co., Milwaukee, Wis.—This company has recently issued a new bulletin on vibrating screens which will be of much interest to many industries. The bulletin (No. 1474-B) covers the company's new "Aero-Vibe" inclined type of screens that float in the air suspended by cables and springs. Illustrations include both single and double deck types. Specifications are included.

Askania Regulator Co., Chicago, Ill.—A very interesting bulletin entitled *Automatic Control for Steam Generating Units* has been issued recently by this firm. The booklet shows various applications of the company's boiler controls and devotes much space to fundamental problems of boiler control, the company's system of metered boiler control, in addition to illustrating the company's jet-pipe principle in these connections.

W. H. & L. D. Betz, Philadelphia, Pa.—This firm has announced that reprints of the article, "Water:—A Raw Material for the Paper Industry," which appeared in the June and July issues of THE PAPER INDUSTRY AND PAPER WORLD, may be had by writing direct to the company at 235 W. Wyoming Ave.

Bristol Co., Waterbury, Conn.—A new 24-page bulletin covering the Metameter system of telemetering has been released lately by this company. The bulletin is complete with line drawings to show the principle of operation of Bristol's Metameter and the method of installation. This bulletin (515) is a comprehensive booklet on the subject of telemetering that will be of great value for the reference files of every operating and supervising engineer.

Buffalo Forge Co., Buffalo, N. Y.—This company has just published a new bulletin (No. 3137) describing the construction and uses of its new Model C "Breezo-Fin" unit heaters. Capacity rating tables are included in the release.

Chain Belt Co., Milwaukee, Wis.—A very attractive and informative catalogue (No. 333) on Rex roller chains and sprockets has been put out recently by this company. Covering 128 pages, this publication contains much information and data on roller chains, non-corrosive chains, block chains, leaf chains, extended pin chains, flat top chains, and sprockets. A special section is devoted to engineering information and includes such subjects as chain selection, horse power curves, horse power tables, chain lengths, shaft center distances, lubrication and installation and maintenance. This catalogue contains numerous drawings, tables, charts and photographs which together with the detailed written material, make it a thing of value to any industrial engineer or plant executive.

Chase Brass & Copper Co., Waterbury, Conn.—A new catalogue describing and illustrating the new Chase copper and bronze welded fittings has been released lately by this firm. The catalogue, 12 pages in length, shows several paper mill installations and contains many drawings and much data relative to the company's copper tubes and copper tube fittings. Price lists and specification tables are included in this release.

Combustion Engineering Co., Inc., New York, N. Y.—Of interest to many is the new 36-page catalogue (PC-5) on C-E direct fired systems for burning pulverized coal, recently issued by this firm. The catalogue contains a synopsis of the development of pulverized coal firing and its influence on the capacities and designs of steam generating units. The section on mills describes both the impact and bowl mill types for direct firing. Mill feeders are also described. Illustrations include, in addition to details of mills, feeders and burners; numerous installation views covering the application of pulverized coal to different boiler types.

Davis Regulator Co., Chicago, Ill.—This company has recently published a booklet (No. S1) on solenoid valves which contains much valuable data on the construction and operation of this type valve. Price lists are included in this publication.

Elgin Softener Corp., Elgin, Ill.—This company's bulletin (No. 510) presents an interesting treatise on the subject of continuous blowdown systems for steam boiler plants. The need for such systems is illustrated by typical plant studies with useful charts and tables. The bulletin is a new, useful treatise on an old subject.

Fedders Manufacturing Co., Buffalo, N. Y.—Just recently issued is this company's new bulletin (No. 57) dealing with the company's unit heaters. The bulletin contains interesting photographs showing construction and installation, in addition to capacity and dimensional data about the product.

Federal-Mogul Corp., Detroit, Mich.—A new book just recently published by this firm illustrates the various types of engine bearings, bearing liners and bushings in general use: the newer types now coming into use, and the methods of design and manufacture. The booklet describes and illustrates a wide variety of modern bearing and bushing applications on machines and appliances.

B. F. Goodrich Co., Akron, Ohio.—Including for the first time a table on the effect of load and speed on tire service, this company has just published an operators handbook on truck, bus, farm and industrial tractor tires. Containing 66 pages, the volume contains much statistical material of interest to every operator of commercial vehicles. Twelve pages on data of tires for industrial uses are included.

Ingersoll-Rand Co., Phillipsburg, N. J.—Equipment for pulp and paper mills is the subject of a new, 8-page bulletin recently published by this company. Illustrated and described in the release are such diverse types of equipment as pumps, compressors, pneumatic tools for construction and repair work, condensers, Diesel engines, refrigerating units and vacuum pumps. The bulletin (2273-A) gives a very complete picture of the company's products for use in the paper industry.

International Filter Co., Chicago, Ill.—A very informative bulletin (No. 1850) has been issued recently by this firm. The new release contains many illustrations and much written material regarding the company's hot-flow water softeners for boiler feed service. Cross-sectional diagrams and drawings aid the written material and photographs in presenting all aspects of the construction, design and usages of the company's product.

International Nickel Co., Inc., New York, N. Y.—The development and research division of this company has recently issued a revised edition of its bulletin (T-7) on *Properties and Uses of Inconel.* This edition contains many changes from the preceding edition. The text has been rearranged and in many places has been rewritten. The release contains much valuable data on the subject and there are several new illustrations included. Inconel is a registered trade-mark of the company which is applied to a nickel alloy containing approximately 80 per cent nickel with additions of chromium and iron.

Magnus Chemical Co., Garwood, N. J.—A new folder describing the Magnus vapor cleaner for use with steam or vapor cleaning machines, has been released lately by this company.

Pfaltz and Bauer, Inc., New York, N. Y.—An interesting leaflet describing DeHaen's Fixanal Preparations for standard solutions has been published recently by this company. The leaflet shows Flaxanal Preparations, correctly weighed and standardized analytical chemicals, packaged in a unique manner, which when diluted according to directions produces accurate volumetric solutions ready for instant use.

Pressed Steel Car Co., Pittsburgh, Pa.—A new, informative bulletin describing the company's line of industrial railway cars and accessory equipment has been issued recently by the company. The bulletin (No. 71) is well illustrated and contains much information as to the usages of the company's product.

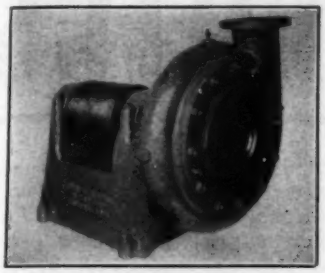
Quigley Company, Inc., New York, N. Y.—A new bulletin (No. 327-C) on "Insulag," refractory lagging for temperatures up to 2,200 degrees fahr., has been issued recently by this firm. The release explains the properties of the product and illustrates by means of photographs and written material, the various uses of it. Two charts included in the bulletin enable an engineer to determine the heat savings attainable by use of the product.

Joseph T. Ryerson & Son, Inc., Chicago, Ill.—This company has recently issued its new, 1939 stock list of "Certified Quality Steels." The booklet, 248 pages in length, contains a wealth of data relative to the steel products produced by this company. Not only are there many illustrations included in this release, but in addition complete specifications are given. This very informative, 4½"x8½" booklet should be of much value to many manufacturers.

Turner Halsey Co., New York, N. Y. (selling agents for Mt. Vernon Woodberry Mills, Inc.)—An interesting broadside pertaining to facts about the Woodberry reinforced dryer felt has been released lately by this company. Interesting photos show the construction of the product. Included also is a table showing the performance results of the first ten Woodberry felts in commercial use. Many pertinent facts and data are contained in this release.

United States Hoffman Machinery Corp., New York, N. Y.—A new booklet describing and illustrating this company's heavy duty portable vacuum cleaners for industrial use, has been issued by this firm. This letter-size, 8-page booklet, attractively printed in two colors, tells of the nature of dust hazards and shows the special applications designed by the company to simplify industrial cleaning problems. Special emphasis is laid upon the arduous requirements of industrial service in terms of the exacting demands upon equipment. Much practical information is furnished for adapting vacuum cleaning to many varied industrial uses. The booklet (A-303) may be obtained from the Air Appliance Division of the company in New York City.

Yarnall-Waring Co., Philadelphia, Pa.—This company has recently issued a new bulletin (G-1304) which is a newly revised edition of the firm's condensed folder on the Yarway line of steam plant equipment. This 12-page release contains many illustrations and there is much descriptive written material on the company's blow-off valves, water columns, water level gages, expansion joints, spray nozzles and steam trap.



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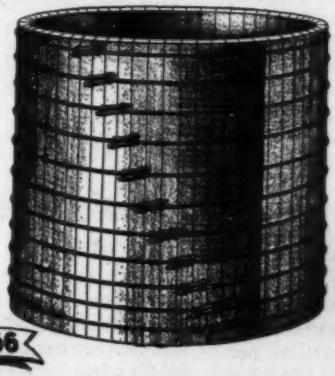

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OTHER COUNTRIES

THE WAR CRISIS

From here, there and everywhere comes bits of news regarding the status of paper mills abroad and how they were affected by the recent crisis in Europe. Although little news regarding any specific industry came through regular news channels, some idea of how the recent political moves affected the paper industry in Europe was gleaned from foreign journals, especially those of Great Britain.

During the recent crisis it has been difficult to obtain information of any sort from the paper mills in the area ceded by Czechoslovakia to Germany. According to the October 14 issue of *The World's Paper Trade Review* some speculation is rife as to what Germany will do with the mills which now come within her jurisdiction. One authority, says the British magazine, suggests that already Germany has too many mills; and as they are mainly concerned with supplying the home market, he does not see how the extra tonnage from Sudetenland is to find an outlet within Germany, especially in view of the earlier absorption of paper mills in Austria. These mills, it is stated, suffered because they lost their ability to export. On the other hand, it is pointed out, Czechoslovakia possesses extensive forests and it is possible to build a new mill in twelve months. Therefore, it was said, it might be possible to transfer the equivalent of the Sudeten paper industry elsewhere.

With the transfer of the mills to Germany, however, the conditions of export will be altered. Automatically, it was brought out, the paper cannot be sold via London to South America, owing to the trade arrangements which specify that business is to be done direct. Czechoslovakia, in her former status, had 118 paper mills with a working force of about 16,000.

Paper Gas Masks

From the recent Interim Issue of the British *Paper-Maker* comes an interesting sidelight to the war crisis in Europe. A great deal of anxiety, says the item, has been caused because of the high cost of producing gas masks. A gas mask made of paper has been constructed, the item further stated, by "the Finnish Captain Hartikainen" which costs only a fraction of the price of the usual type of gas mask. This mask is made of paper, being constructed of a double bag of thick kraft paper. Between the bags is an isolating layer consisting of bitumen.

Gas Proof Suit

Suits from the viscose film "Alofan" as a protection against mustard gas are another development resulting from the recent war scare. The A. B. Nordisk Silkecellulosa, Norrkoping, Sweden, is responsible for this development. It is said that the viscose film is absolutely impenetrable to mustard gas and that such a suit with hood and gloves and boots of rubber makes a cheap but sure protection.

English Mills Respond

The paper and allied trades in Great Britain were not slow to co-operate with the authorities in the event of an emergency as was shown by Messrs. Albert E. Reed and Co., Ltd. Over 130 of the staff and employees of the Reed firm and subsidiary companies were mobilized and joined their units when the German crisis occurred. The majority of this group belonged to an anti-aircraft company, headquarters of which were close to the mill.

◆

ITALIAN NEWS

Marsh Cane

The growing and treating of marsh canes *(arundo donax)* for the production of cellulose is one of the newer developments instigated by the "Snia" Viscosa organization of Turin, Italy. It has been calculated that the first crop of canes, planted on 1.200 hectares of ground (hectare equals about 2.471 acres,) should yield about 16 tons. The "Snia" people have solved, it is claimed, the problem of securing an independent production of cellulose through the caustic soda and chlorine process used on marsh cane. These processes have already given good results on other raw materials, it is reported.

The "Societa delle Cartiere Meridionali" of Isola del Liri have experimented a great deal with the production of paper from marsh canes. A load of these canes were crushed, cut and boiled in a spherical autoclave for 8 hours. The cooked pulp was separated from the lye by the helicoidal press and successively disintegrated, washed, purified, sorted, thickened and whitened. A cellulose yield of 40 per cent was thus obtained. For 100 kilos of bleached cellulose, with 88 per cent of dry product and wetted up to 50 per cent, there were used 60 kilos of common salt, 22 kilos of lime, 10 kilos of sulphur, 37 kilos of coal, 180 KWH of electrical energy, etc. Under the microscope the cellulose was seen to constitute fibers of the average length of 2 millimeters with a width of 0.0.5-0.018 millimeters. The non-fibrous elements were numerous but less abundant than in straw. The cellulose yielded a paper suitable for register classification having a weight of 75 grams per square meter. Purification for obtaining rayon cellulose did not present difficulties, although the yield was considerably reduced.

Paper for Bootmaking

In the field of special papers, the Italian paper industry continues to use its ingenuity to good advantage. Largely used in Italy by the shoe factories, is a type of paper similar to the Japanese paper, *broussentia papyrifera,* which possesses extreme softness and strong resistance. This paper serves to protect the leather used to make the shoe or boot from staining and therefore is resistant to water, oil and various solvents employed in the manufacture of boots and shoes. At one time Italy was more or less dependent on the United States and Germany for this type paper, but since 1936 the paper industry in Italy has managed to satisfy the various requirements of the leather industry.

Markets

There were many requests for paper and paperboard during the last few months. Packing paper sales were extended considerably and newsprint sales were "satisfactory". Writing paper had fair sales, as did tissue paper. Register paper, however, dropped in sales. Filter paper was in demand and requests for cellulose were numerous but importers had to limit their business, in spite of this, due to import restrictions yet in force.

◆

BRITISH NEWS

State of Trade

Events towards the end of September, in the European situation, completely shattered all confidence in trade and October has been similarly affected by fear and uncertainty regarding the

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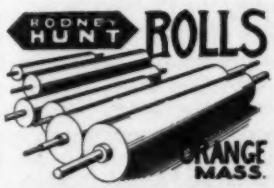

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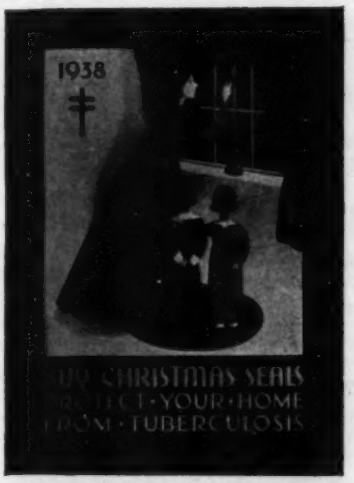
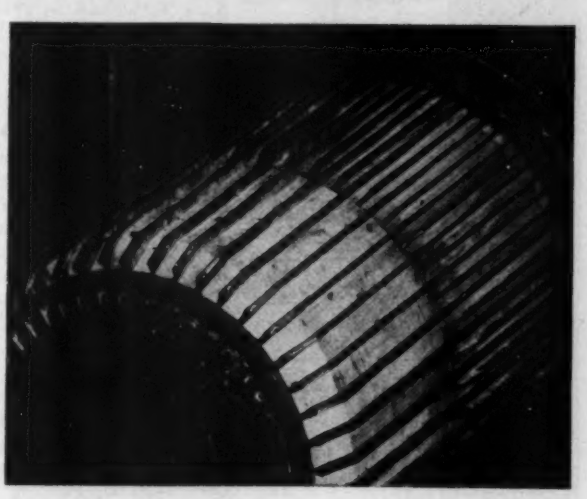


CHRISTMAS SEAL SALE

1938

Thanksgiving Day to Christmas

RUST
TAKES A HOLIDAY



Jordan bars of ARMCO Stainless Steel help preserve paper stock color and cleanliness. The bars are highly resistant to corrosion and abrasion and give much longer service.

Rust is practically a stranger in mills that use equipment made of ARMCO Stainless Steels. Pulp and paper come through clean and maintenance costs are less.

Short metal life and paper stock damage caused by corrosion are things of the past. Chemicals used in pulp and paper production have little effect on ARMCO Stainless Steel. It is highly resistant to abrasion and assures longer equipment life. The quality of your product improves and you save money in the bargain.

Let ARMCO Stainless help you produce good paper. It is ideal for the cheaper grades of paper as well as the finer grades. There is a correct type for every application. We'll help you select and apply it—or just specify "ARMCO Stainless Steel" to your equipment fabricator. The American Rolling Mill Co., 1321 Curtis St., Middletown, Ohio.

ARMCO
STAINLESS STEELS

PULP
BLEACHING
COMPANY

ORANGE
NEW JERSEY

CELLULOSE
PURIFICATION

(*Continued from page* 881)

which the cork inserts were missing, and, as a result of assuming that the safety device was in good condition to sustain movements on the ladder, the employee had a serious fall when the safety shoes slipped.

Poor housekeeping, the reports show, caused falls and slips in and around the plants. Specific hazards mentioned were: boards being left lying around, holes in the floor, and slippery conditions due to water. Icy and wet conditions on the grounds and on pulp wood piles were also important.

PERSONAL CAUSES OF ACCIDENTS

In stating the personal causes of the accidents it was most often stated that the employee was "unaware of safe practices," 22 per cent of all injuries being explained in this way. This cause was a significant factor in accidents involving rolls, reels, and winders. Experienced employees, for example, sustained injuries when assigned to work involving rolls which differed in type from the ones with which they were more familiar.

Next in importance were "improper attitudes" of employees. This term embraces recklessness, willful disregard of instructions and undue haste. Recklessness was assigned to 13 per cent of the 231 cases. This cause was often involved in accidents in which floors and other working surfaces were agencies. An employee, for example, sustained a broken ankle by deliberately walking into water that obscured his view of a loose lid, which turned when he stepped on it.

future. The apparent determination by the people and the Government to speed up armaments and set in motion a series of voluntary schemes for the training of the nation to make itself sufficiently strong to guarantee its own peace is having the effect of restoring confidence. At last the people have a common aim sufficiently strong to bind all parties together and as October closes so the demand for paper is gradually returning to normal. Any weakening in prices has disappeared and there is now little likelihood of a change in these before the end of the year.

Use of Wrappings

During each autumn and winter a series of trade shows and exhibitions are held in London. A marked feature of these shows during recent years has been increasing use of wrappings for all forms of foodstuffs. Even the Goodyear Tire and Rubber Co., have entered this field with a moisture and waterproof transparent wrapping called "Pliofilm." Waxed paper, foils and metal papers are utilized in abundance. Incidentally, one of the leading makers, Waxed Papers, Ltd., has just contracted for an extension to their works.

Coated Paper

The rapid progress made in this country by the Process Coated papers has awakened other paper makers to the possibilities of such papers and a new "machine" coated paper has just appeared on the market. As the best British Art papers carry an esparto body this new "machine" coated paper is also being manufactured on this superior body paper. The makers of real art papers are watching the position closely and although a number of magazines are being produced on these "machine" arts, thus replacing the cheaper printing papers, the position of the real coated papers has not yet been seriously challenged.

Paper Trade Biography

A charming tribute has been paid to the late Sir Albert Spicer, head of the well known paper firm of Spicer Bros., (now Spicers Ltd.,) by one of his eleven sons. This takes the form of a biography and offers a splendid insight into the life of this famous paper man, Congregationalist and politician.

Esparto Position

Reports on the esparto situation are still conflicting and it appears that steps to restrict export are still under consideration. One of the leaders has issued a call for co-operation. Meanwhile no quotations are being received for the Spanish quality and Oran has dropped back to £3-12-6; £4-0-0 per ton on a freight basis of 20/–.

Kraft Papers

Some concern is felt in this country over the present position of Scankraft —the agreement existing between the British and Scandinavian Kraft makers and merchants—and a call has been made for a reduction in prices in order to meet the weak state of the market. But against this it is pointed out that the British Makers are still working on high-priced pulp. It appears that, the market is being entered heavily by imitation krafts at prices considerable below those for pure krafts.

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▶▶▶ THE GUTENBURG MUSEUM at Mainz, Germany, has now been enlarged by the addition of a special section devoted to the paper industry. This section will maintain an exhibit of all matters pertaining to paper. A paper research institute to which a watermark archive is attached, will be represented in a sub-section. Formerly this museum contained only exhibitions demonstrating the history and development of the printing arts.

◆

GERMAN PAPER COMPANIES MERGE

Stock of the Natronzellstoff-und-Papierfabriken A. G. (better known as Natronag) has been purchased by the large Zellstoff-Fabrik Waldhof concern, it was revealed recently. The control of Natronag was hitherto held by the Hartmann family, which at one time practically dominated the German paper industry. By this transaction the former influence of the Hartmann concern was practically eliminated.

By acquiring a dominating interest in Natronag, the Waldhof company, in addition to its strong position in the sulphite chemical pulp branch of the industry, now also occupies a strong position in the manufacture of soda pulp. Of the entire German wood pulp production estimated for 1937 at around 1,500,000 metric tons, almost 500,000 were produced by the Waldhof company and its affiliations, Kostheim Cellulose und Papierfabrik A. G. Zellstoff and Natronag have now concluded a working arrangement under which all questions of purchase and technique connected with sulphate cellulose production are handled in common so as to insure the best possible economic basis in the supply and utilization of raw materials and in the distribution of output.

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ASSOCIATIONS

S. E. PAPER TECHNOLOGISTS FORM ORGANIZATION

ABOUT forty technical men representing new paper mills in the Southeastern States gathered at the Roosevelt Hotel, Jacksonville, Florida, on the morning of October 15 for the purpose of organizing a group of paper technologists in that section.

After registration, the morning of the first day was given over to a tour through the new plant of the National Container Corporation and the Glidden Paint Company's plant, both in Jacksonville.

This inspection tour put the party in a most receptive mood for the excellent luncheon that was served them, their guests and wives, at the Roosevelt Hotel at one o'clock. Dr. Charles Carpenter, technical director of the Herty Foundation laboratory in Savannah, acted as master of ceremonies at the luncheon, and he introduced in a most fitting manner, the luncheon speaker, Richard Laftman, general manager of the National Container Company's plant in Jacksonville.

Although Mr. Laftman kept his talk within time limits, he brought out some thoughts that were most interesting to all of those present. He stressed the fact that the paper industry in the South has passed its infancy. He also compared former practices with those now followed, going back to the time when it was almost impossible to get a group of men to sit down and enter into a discussion of their problems. In closing his talk, Mr. Laftman commended those who were in charge of the meeting and said he hoped that the results of the meeting would "bring together all the technical men in the paper industry in this part of the country."

Following the luncheon, the group enjoyed a moving picture showing the manufacture of du Pont chemicals, after which the ladies, under the guidance of Mrs. D. G. Moon of Savannah, enjoyed a bridge party, while the men gathered for the business session of the afternoon.

Two technical papers were the main features at the afternoon session. Walter Rodowski, of the Union Bag and Paper Company, Savannah, gave the first paper on the afternoon program. He took up the subject of the slowness and freeness testing of pulp. R. Withen, of the Ciba Corporation, Charlotte, N. C., followed with a paper devoted to dyestuffs used in the pulp industry. Both of these papers evoked interesting discussions.

Before adjourning, the group elected officers for the coming year, making D. G. Moon, of Savannah, chairman. Others elected are: Vice chairman, R. C. Richter, National Container Corporation, Jacksonville; secretary-treasurer, Walter Rodowski, Union Bag and Paper Company, Savannah.

It was decided to hold the next meeting of the group in Savannah, Georgia, and April 17-19, 1939, was tentatively chosen as the time for that meeting. These dates would bring the meeting to Savannah, simultaneously with the Southern Paper Festival, a colorful event which is even now being planned.

◆

CAPITAL CITY WILL ENTERTAIN SUPERS IN 1939

The 1939 convention of the American Pulp and Paper Mill Superintendents Association will be held June 13, 14 and 15 at the Wardman Park Hotel, Washington, D. C., according to Robert L. Eminger, secretary-treasurer of the organization. Previously it had been decided that Baltimore would be the 1939 convention city.

◆

PHILA. HOST TO SUPTS. DIVISION

The Benjamin Franklin Hotel, Philadelphia, Pa., was the scene of the fall convention of the Pennsylvania-New Jersey-Delaware Division of the American Pulp and Paper Mill Superintendents Association, October 7-8, at which time several important discussions were held.

Papers read at the sessions included: "Roll Loading Control for the Paper Mills and Metering of Flow to Sewers," by Avery H. Stanton, Mason-Neilan Regulator Company; "Taylor Instruments and Their Use in the Paper Mills," by C. D. DeMers, Taylor Instrument Companies, and "Moving Picture Showing the Complete Construction of Paper Mill Machinery," by Allen A. Lowe of the Sandy Hill Iron and Brass Works. This latter presentation was the actual showing of a film illustrating the complete process of manufacturing paper and pulp mill equipment.

At the meeting, James Fish, Paterson Parchment Paper Company, was elected chairman; E. M. Sligh, Cranford, N. J., was elected 1st vice-chairman; S. C. Wentz, P. H. Glatfelter Company, was elected 2nd vice-chairman; Fred I. Jacoby was elected 3rd vice-chairman, and Alice R. Dow, Nutley, N. J., was re-elected secretary-treasurer.

◆

EMPIRE STATE TAPPI TO MEET IN SYRACUSE

The Empire State Section of the Technical Association of the Pulp and Paper Industry will hold a meeting November 19 at Syracuse, N. Y. There will be an afternoon session at the New York State College of Forestry, Syracuse University, with papers and discussion relative to the chain drive and other special equipment for operating and controlling the new paper machine which will be running at that time. In the evening a dinner meeting will be held at the Hotel Onondaga Roof Garden, followed by music and dancing.

◆

POWER SHOW TO FEATURE MANY NEW EXHIBITS

Exhibitors are speeding their preparations for an unusually large and comprehensive presentation of power plant and mechanical engineering equipment for the forthcoming Thirteenth National Exposition of Power and Mechanical Engineering, December 5-10, Grand Central Palace, New York.

The power show, as heretofore, will be under the management of the International Exposition Company, Grand Central Palace, New York. Charles F. Roth, president, will again be personally in charge.

An ADDRESS To Remember

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The paper industry knows that our Felts are outstanding for their standard, uniform quality and dependability. . . . These Felts are long-wearing and they assure paper made with the finest finish. . . . They are woven to permit machine operation at top speed at all times.

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IF you want to reduce maintenance expenses specify Sandusky Centrifugally Cast liners, sleeves, bushings and rings. Sandusky products are cast under pressure. They last longer because of their denser grain structure and more uniform hardness. Superintendents like Sandusky bushings because they are alloyed to meet service conditions and save costs of frequent replacements. One large mill is refitting all of their digesters with Sandusky sleeves of a special acid resisting bronze (See Illustration). When you need such parts in a hurry—and want the best—Specify Sandusky Centrifugally Cast.

Write for Illustrated Bulletin No. 537

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ALLIED

TIME CAPSULE RECORD NOW IN REPOSITORIES

Over 2,000 "key repositories" throughout the world including libraries, museums, colleges, universities, monasteries, shrines, etc., have received the limited edition book describing the Westinghouse Time Capsule and telling posterity of 5,000 years hence how to find it and understand it.

The Book of Record describes the design and structure of the torpedo-shaped Time Capsule and the Pyrex inner glass crypt in which the "Cross section of civilization" was packed in a nitrogen atmosphere. It relates, also, the ceremonies at the New York World's Fair when the Time Capsule was deposited fifty feet in the ground before the Westinghouse Building (cf. THE PAPER INDUSTRY AND PAPER WORLD, p. 768 Oct. 1938).

The Book of Record contains methods for locating the historical treasure. It was printed in non-fading ink on permanent rag paper from type designed by Frederic W. Goudy. The Book of Record has been sent all over the world, even to such remote places as Tibet's Lamaseries, the Shinto Shrines of Japan and the Buddhist Temples in India, Ceylon and Burma. With the book went a letter appealing to those in charge to preserve it carefully and to leave word to their successors that should the book show signs of disintegration in a few centuries, they take steps to have it reprinted and annotated.

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DOMINION ENGR. SECURES LARGE POWER CONTRACT

Dominion Engineering Company, Montreal, large manufacturers of hydraulic and papermaking machinery, has secured a contract for the manufacture of four 40,000-horsepower hydraulic turbines for installation at the St. Maurice Power Corporation's plant at La Tuque on the St. Maurice River. A large proportion of the power which will be developed at this point will be taken up by the local sulphite pulp mill of the Brown Corporation.

◆

CHROMIUM CORP. PLATES 15-TON DRUM

One of the largest single pieces of equipment ever to be chromium-plated was recently shipped from the Waterbury, Conn., plant of Chromium Corporation of America. This 15-ton drum, fabricated from welded steel plates, is 12 feet in diameter with a 6-foot face width. The entire face area, (approximately 32,500 square inches), was precision-ground and microscopically inspected for the most minute imperfections. Unusually rigid surface-finish specifications required extreme precautions to eliminate the slightest flaws prior to the final plating operation.

A heavy deposit of electro-plated chromium was directly applied, after which the face area was subjected to further grinding and polishing operations, producing a high-lustre flawless mirror finish with the non-corrosive, hard and smooth characteristics typical of industrially chromium-plated surfaces.

The plating of this large drum was undertaken only after 6-foot diameter drums were similarly processed and their performance proved satisfactory. The finished drum is operated in equipment for the coating of high-grade paper.

◆

G-E CELEBRATES 60TH BIRTHDAY

A bronze plaque commemorating the General Electric Company's 60th anniversary was recently presented to the company by the Schenectady (N. Y.) Chamber of Commerce. The plaque was presented by Laurence G. Magner, president of the Chamber of Commerce and was accepted by Gerard Swope, president of G-E. A large group of employees, Chamber of Commerce officers, and officials of the General Electric Company witnessed the brief ceremony.

During the evening, at a dinner given by the Chamber of Commerce, three veteran employees of the company with 50 or more years of active service were presented with engrossed certificates and diamond-studded pins by G-E. The principal speaker at the dinner was Dr. George R. Lunn, public service commissioner of the State of New York.

◆

▶▶▶ A NEW WALLBOARD MILL with an annual capacity of about 3,000 metric tons of white porous wallboard has just been completed in central Sweden. With this new addition to the industry, it is estimated that the total annual output in Sweden now reaches between 130,000 and 140,000 metric tons.

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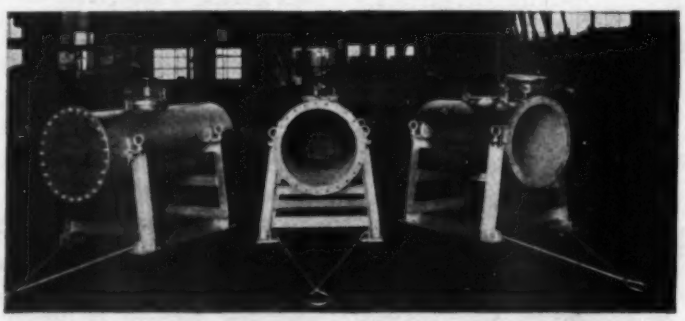
▶▶▶ A NEW PLANT will be erected to utilize the waste from the Canadian International Paper Company's Hawkesbury (Ontario) sulphite mill, it was reported recently. The waste, which has been running into the Snye Channel of the Ottawa River for many years, has commercial value.

WOOD TANKS — TILE TANKS



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Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

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Screened clean by 22 APMEW knotters (Each 105 tons daily driven by ONE H.P. Motor) and 28 APMEW Screens (First Screens each handling 105 tons daily using 35 H.P.) in new Kraft Mills of the South.

CLEAN PULP IS BEING PRODUCED—WITH GREAT EFFICIENCY by Centrifugal Separation Principle and Inward Flow Screening.

TEN CENTS per ton pays for these 22 APMEW Knotters and 28 APMEW Screens in one year. SAVINGS in power, labor, maintenance, repairs, etc.; usually repay the investment in less than one year, and thereafter makes good earnings.

AMERICAN PAPER MACHINERY & ENGINEERING WORKS, Inc.

GLENS FALLS, NEW YORK

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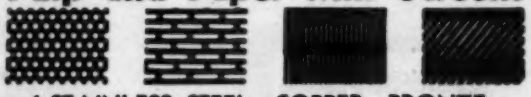

of STAINLESS STEEL—COPPER—BRONZE—MONEL—CHEMICAL RESISTING ALLOYS

Perforations that are accurate in size and alignment

ANY METAL » « ANY PERFORATION

The Harrington & King PERFORATING Co.

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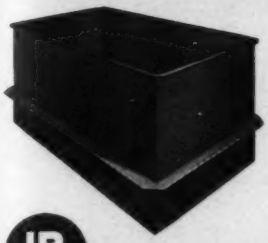

LITTLEFORD BROS. with 54 years' experience in making tanks from Stainless Steel, Stainless Clad, Monel Metal, Nickel, Nickel Clad, Copper Clad, Plain Sheet or Plate Steel, can design or make any size or shape Tank desired. No matter how large or small, your needs may be, Littleford Bros. will be glad to furnish an estimate. Send in your specifications or write today to see our engineer. Any information on Tanks will be gladly furnished without obligation.

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HARRISON, N. J.
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When you specify Coes Micro-Ground Knives you will put into service the longest and broadest experience in the machine knife industry.

COES
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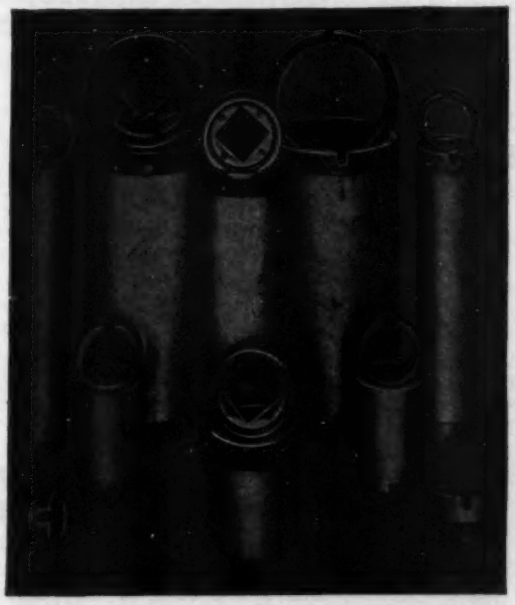
Knives are standard equipment with users who want the best.

Behind each Coes knife is more than one hundred years of experience. We are not content to rest on our record, but are constantly improving our product and meeting and solving new problems such as higher speeds, new materials to be cut and new applications of edges.

"That he who cuts may cut well"

LORING COES COMPANY
WORCESTER, MASS.



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CAPS

Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

Long draw protected slot caps of heavy gauge steel in all standard sizes.

Heavy duty caps with re-enforced square hole. This patented feature of re-enforcement gives added strength and durability.

CORES

Samples of caps or cores will be gladly submitted.

ELIXMAN PAPER CORE COMPANY, Inc.
CORINTH, N. Y.

FORESTRY

B. C. STARTS REFORESTATION

After eleven years of experimental work, the Provincial Government of British Columbia has now started on a definite plan of replacing the forests of the Province which have been destroyed by logging and fires. Under plans announced by the Hon. A. Wells Gray, Minister of Lands, the forest branch of the Provincial Government will be planting 10,000 acres a year of new fir trees, largely on Vancouver Island, where logging has been concentrated for years.

It has been proposed to step up the production of the Green Timbers forest nursery on the Pacific Highway near Westminster, from 3,000,000 to 10,000,000 seedling trees a year and to establish two more nurseries on Vancouver Island in the vicinity of the denuded areas. As it takes two years to produce planting stock from seed, the development of the program will be gradual. Extra seed collections are now being made to begin the increased production of seedlings for transplanting.

Three million seeds were put in at Green Timbers this year by the forestry service as the first step in the expansion program. Up to now the scheme has been to experiment with a few hundred acres of planting each year. The cost of planting is estimated at about $10 per acre. Th Green Timbers nursery can be increased to a capacity of 6,000,000 seedlings a year and with some additional clearing, up to the proposed 10,000,000. It requires slightly less than 1,000 trees an acre for reforesting.

Logging companies on Vancouver Island have offered sites to the forest branch for use as nurseries and are co-operating in every way. Preparation of the ground will be done by relief labor. Forestry experts point out that planting 10,000 acres a year would be a big step in keeping up to the annual toll of forests from logging and fire.

◆

NO TIMBER FAMINE

No timber famine is threatened in the Great Lakes States, whose forests provide paper mills with an important source of their wood supply, according to Mr. O. T. Swan, of Oshkosh, Wis. Mr. Swan, manager of the Northern Hemlock and Hardwood Manufacturers Association, issued a statement to this effect, basing his findings on a government survey. It was indicated that Wisconsin, Michigan, and Minnesota have 60 per cent more saw timber than was previously estimated. Referring to the survey, Dr. Raphael Zon of Minneapolis, director of the Lake States Forestry Experiment Station, said that 40 per cent more timber area also was shown in the three states.

◆

QUEBEC'S FIRES PROVE COSTLY

Figures issued by the Forestry Protective Service of the Quebec Lands and Forests Department give the complete story of the ravages of forest fires in the province. It has been a very costly year for the Department. There were 1,033 fires caused by the following: clearing, 543; forestry operations, 14; recreation, 43; travelers, 139; railways, 15; lightning, 30; public works, 6; incendiary, 28; not classified, 102, and unknown 113. The area burned in these fires was 110,734 acres.

◆

McINNIS FAVORS FORESTRY MEET

R. A. McInnis, president of the Canadian Pulp and Paper Association, in a recent address before the Canadian Chamber of Commerce, advocated the calling of a forestry congress early next year at which representatives of the Provincial and Dominion Governments, pulp and paper and lumbermen's associations and forest protective associations would consider practical objectives for a national policy of forest management and conservation. Forest industries in Canada employ 200,000 people and have a total payroll of approximately $170,000,000 it was brought out.

◆

TIMBER SALVAGE PLAN PROPOSED

Much has been seen in the public press about the damage to New England woodlands from the recent hurricane but, while this damage was serious, it was not severe to the growing spruce in the regions from which pulpwood is chiefly obtained, such as northern Maine. Some spruce of this nature was blown down in New Hampshire and Vermont and its salvage as pulpwood or lumber will be undertaken as part of the general timber salvage plan. Fully 85 per cent of the commercial timber down is native white pine. Inasmuch as the wind uprooted or broke down more trees of larger rather than small diameter, a considerable percentage of the spruce is of lumber rather than pulpwood size.

A marketing corporation is to be financed by the RFC and staffed with lumbermen and timberland owners and the logs will be delivered as rapidly as possible to lakes and ponds for storage. Land owners will be paid for the logs delivered to the ponds.

◆

▸▸▸ *Henry C. Draper, K. C.,* who is solicitor for Huron Forest Products, Ltd., returned to Ontario recently after a two months' visit to France, Germany, Finland, Norway, Sweden, Esthonia and Great Britain. Dr. Draper, who is an astute student of pulpwood cutting methods and reforestation, made a special study of the respective systems in each country from an economic and productive standpoint.

◆

WOODS OPERATIONS DEFERRED IN CANADA

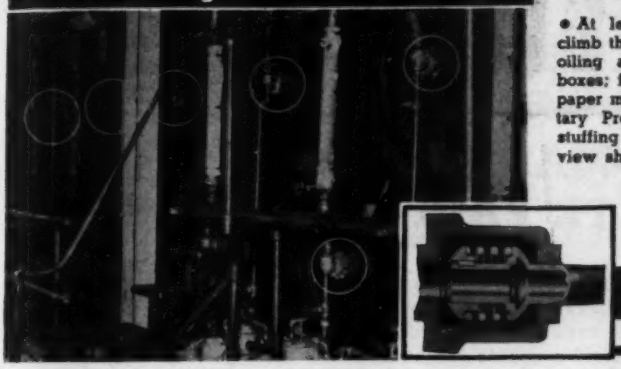
The Canadian newsprint industry commenced its woods operations for the 1938-39 season around October 1, on a basis of about 30 per cent of last year. Normally, the companies get under way about August 15, but this year it was decided that, in view of the marked reduction in the number to be employed it would be better to defer commencement of operations as long as possible to permit woodsmen to remain in their present employment. It is unlikely that more than 25,000 men will be employed in woods operations this year.

◆

PULPWOOD SOLD TO GERMAN BUYERS

Several New England paper manufacturers, principally in Maine, have been selling some of the pulpwood which they have cut in eastern Canada, to German buyers. In most cases this represents surplus wood and will not affect the companies' supply in any way. While some of this wood is, no doubt, being used in paper manufacture the bulk of the German imports are being used in the synthetic fibre factories.

These are good stairs — but — THEY WON'T BE NEEDED NOW!



• At least no one will need to climb them for inspecting, packing, oiling and adjusting the stuffing boxes; for this is one of the many paper machines where Johnson Rotary Pressure Joints have ended stuffing box troubles. The sectional view shows the basic construction of these Johnson Joints. Two special, self-lubricating carbon graphite rings form the bearings and pressure seal. Sealed by the pressure, they are self-adjusting. Equally important is the ball and socket design and the annular space around the outlet which provides for angular or lateral misalignment —greatly increasing joint life. There is a Johnson Joint for every machine with every type of drainage—a joint that will save time, power, and step up production. Ask for latest bulletins.

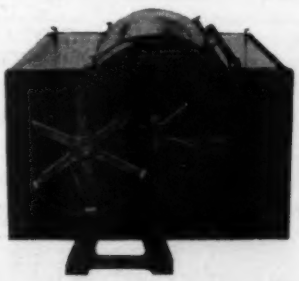
THE JOHNSON CORPORATION
845 WOOD STREET — THREE RIVERS, MICH.

The A. D. Wood Machine

PULP THICKENER — WASHER — SAVEALL
and WATER SCREEN

No Couch Roll or Doctor. Handles variable flows and consistencies. Equipped with patented Double Sealing Collars. Rubber covered or stainless steel construction. Efficient, economical and practically automatic.

Over 30 installed in 1937.



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GLENS FALLS, N. Y.

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POTPOURRI

MANUFACTURE HAND-MADE PAPER AT N. Y. STATE FAIR

THE New York State College of Forestry exhibit at the New York State Fair this past fall featured the Department of Pulp and Paper Manufacture. It was one of the most successful displays ever presented by the College of Forestry in a quarter of a century of State Fair exhibiting. A great variety of paper products, ranging from two jumbo rolls of newsprint to milk bottle caps, and making use of colors running from plain white to the brilliant hues of Christmas wrappings, gave visitors at the State Fair a new concept of the importance of the paper industry.

Two large wheels attracted special interest. On one, arranged like the spokes of a wheel, were mounted new and popular books furnished by the Book-of-the-Month Club of New York City. On the other there was a similar arrangement of popular magazines. At the hub of each wheel was a sign carrying a caption, "The World's Ideas Circulate on Paper." The two slowly revolving wheels, one bearing books with vivid paper jackets, and the other magazines with colorful front page illustrations, were flanked by a display of assorted kinds of paper and paper products, thereby giving the public a good idea of the great variety of ways in which paper is being utilized.

The demonstration of hand-made papermaking was the high spot of the exhibit. Three attendants in uniform dress, two of them graduate students of the Department of Pulp and Paper, and one of them an assistant in the Pulp and Paper Laboratory, worked as a unit behind an attractively arranged line of machines and equipment, separated from the public by a low barrier of cedar boughs. When sufficiently prepared, the stock was removed to a vat. The two hand-moulds used were made in England especially for the exhibit, by J. Barcham Green & Sons, and carried as a watermark the seal of the State of New York.

During the thirteen days of the Fair, 81 demonstrations were carried out, and 2,423 sheets of paper distributed. More than 5,000 people were in attendance at the demonstrations while many thousands of others saw parts of the demonstration and the exhibit.

The longer wall of the L-shaped exhibit space was divided into three panels. One panel showed two unusually large photographic views of the College of Forestry's newly installed experimental paper machine, unique in laboratories in this country. A second panel depicted views of the wood chipper, grinder, beater, digester, Oliver filter and the air-conditioned paper testing laboratory. Now a part of the college laboratory equipment.

The third panel carried a large cut-out map of the State of New York showing location of the State's 142 active paper mills and 33 active pulp mills. A chart included in the same panel gave a brief summary of the economic importance of the paper industries of the State and pointed out that New York is the largest producer of paper and paper-board in the United States.

At one end of the exhibit was piled a full cord of pulp wood with a sign indicating that one and three-fifths cords were required to make the two rolls of newsprint on display, and helped to signify the importance of wood to the paper industry by pointing out that over 90 per cent of all paper is made from wood.

In the guessing contest 1,700 people tried their hand in estimating the number of linear feet of paper in two jumbo rolls of newsprint. Estimates ran all the way from 6½ feet to nine million feet. It was interesting to note that women outguessed the men and won the first three prizes, the winner coming remarkably close in estimating the total length of the two rolls to be 46,685 feet, the actual length being 46,630 feet.

Professor Clarence E. Libby is in charge of the laboratories and head of instruction in the Department of Pulp and Paper Manufacture at the New York State College of Forestry. The exhibit was a co-operative project between this department and the Extension Department of the College where Professor Floyd E. Carlson is in charge of the exhibits.

The making of hand-made paper was demonstrated by New York State College of Forestry at the New York State Fair.

◆

▸▸▸ THE AMERICAN WRITING PAPER CORPORATION of Holyoke, Mass., is the second largest taxpayer in that city, its taxes being $93,906.

◆

PAPER CO. TRUCK AIDS RELIEF WORK

An interesting side light to the recent disastrous hurricane in the East was the story of how a sound truck, owned by the American Tissue Mills of Holyoke, Mass., furnished light to a relief station at the American Legion headquarters in Manchester, N. H.

The truck, a virtual electrical power plant on wheels, was on an advertising tour and arrived in Manchester at the height of the storm. Realizing the necessity of lights for relief work in the stricken area, the truck was pressed into service at the offer of E. C. Fitzgerald, the attendant. Wires were connected from the sound truck to the building and the welfare agencies were able to conveniently prepare food and render first aid to those in distress.

The truck is equipped with 50 watt amplifiers which play dance band and popular recordings, a 48-whistle Calliope, the latest-type microphone for announcement purposes, all necessary horns to take care of a large audience, and comfortable sleeping quarters.

"NON-USERS ARE THE LOSERS"

TENAX FELTS

FINISH AND TRIM

We put in QUALITY and REPUTATION
You take out PROFIT and SATISFACTION

When you buy a TENAX FELT fitted to your machine, you have the assurance that many others have been doing the same thing for many years—that their requirements have been just as rigid as yours—that TENAX FELTS have made good. Choose TENAX FELTS for Strength, Water Removal while running, Trim, Performance, and Durability.

"Non-Users Are The Losers"

LOCKPORT FELT COMPANY
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High Density BEATERS

Hundreds of highly successful installations in service.

THE MIDWEST-FULTON MACHINE COMPANY
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TURBINE GENERATOR SETS

2—2500 KW, 80% P. F. Allis-Chalmers, practically new, 3 phase, 60 cycle, 2300 volt, 3600 RPM, condensing turbo generator sets, with surface condensers and auxiliaries.

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CARTHAGE MACHINE CO.
Carthage, New York
« « «
Machinery for Ground Wood and Chemical Pulp

CLAYS

IMPORTED DOMESTIC

PAPER MAKERS IMPORTING CO. INC. EASTON, PENNSYLVANIA, U.S.A.

DOMESTIC—TALC AND WHITING

Close-ups

McCORKINDALE GETS GRASS FROM PULP

Old Mother Earth may have a competitor some day, as far as agricultural pursuits go, if William McCorkindale, president of the McCorkindale Company, Holyoke, Mass., extends his unique hobby of growing plants in wood pulp. The well-known inventor has had such amazing results in growing plant life in pulp that he has applied for a patent in Washington.

"As a hobby which will give anyone in the paper business many pleasant hours," said Mr. McCorkindale, "let me recommend growing plants, grass and vegetables in wood pulp. The necessary material may be had from any pulp or paper mill making sulphite pulp or paper and the utensils needed are nothing more than any one of the various makes of paper cans used as containers for ice cream."

Mr. McCorkindale stated that the procedure is the same as is used in growing plants in water without the use of soil, the pulp taking the place of the soil. "The pulp must be well hydrated," he pointed out, "and as slow as possible, because in this condition it carries a lot of water. The chemicals needed are few and inexpensive. Formulae for their use may be obtained from any one of a number of state colleges."

The pulp merely provides a carrier for the chemicals necessary for the growth of the plant, Mr. McCorkindale explained. "Some of my experiments have been complete failures," the inventor admitted, "while others have been successful. I am going to try to make from the waste material such as roots, stalks and leaves, a sheet of paper. By cooking this waste material and reducing it, if possible, to pulp, I will thus complete the cycle from pulp to pulp. I am also trying, by the introduction of color to the solutions, to see if it has any effect on the colors of various white flowers."

The features of Mr. McCorkindale's new discovery are that the pulp remains in its natural color, is dirtless and odorless.

N.I.A.A. ADDS MONTREAL CHAPTER

The Technical Advertisers Association of Montreal has been accepted as the 17th regional chapter of the National Industrial Advertisers Association, it was announced recently.

Officers of the new N.I.A.A. chapter are: H. S. Van Scoyoc, Canada Cement Company, president; F. A. McLean, Canadian Ingersoll-Rand Company, Ltd., vice-president; A. P. Darcel, Canadian Ingersoll-Rand Company, Ltd., secretary, and Thomas Hart, Jeffrey Manufacturing Company, Ltd., treasurer.

◆

▶▶▶ THE HINDE & DAUCH PAPER COMPANY OF CANADA has put into effect price reductions ranging from about 6 per cent on some lines to 15 per cent on others. While this reduction may have some effect on earnings, depending on the length of time that they are in effect, the company plans to take advantage of lower raw material costs to pass along as much of the reduced quotations as possible.

COMING EVENTS

Nov. 19—Technical Association of the Pulp and Paper Industry, Empire State Section Meeting, New York State College of Forestry, Syracuse, N. Y.

Dec. 5-10—Thirteenth National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York, N. Y.

June 11-14—Twenty-First Annual Convention and Buyers' Fair, National Paper Box Manufacturers' Association, Hotel Astor, New York, N. Y.

June 13-15—American Pulp and Paper Mill Superintendents Association, 1939 Convention, Wardman Park Hotel, Washington, D. C.

WANTED—Wet end of paper machine, wire width 130 to 180 in. Give complete details. Address Box 275, THE FRITZ PUBLICATIONS.

ATTENTION Paper Manufacturers! Practical paper maker—mill superintendent—married—39 years old—efficient—desires connection. Location immaterial. Address Box 276, FRITZ PUBLICATIONS.

FREDERICK Centrifugal PUMPS

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CENTRIFUGAL PUMPS FOR ALL PAPER MILL PURPOSES

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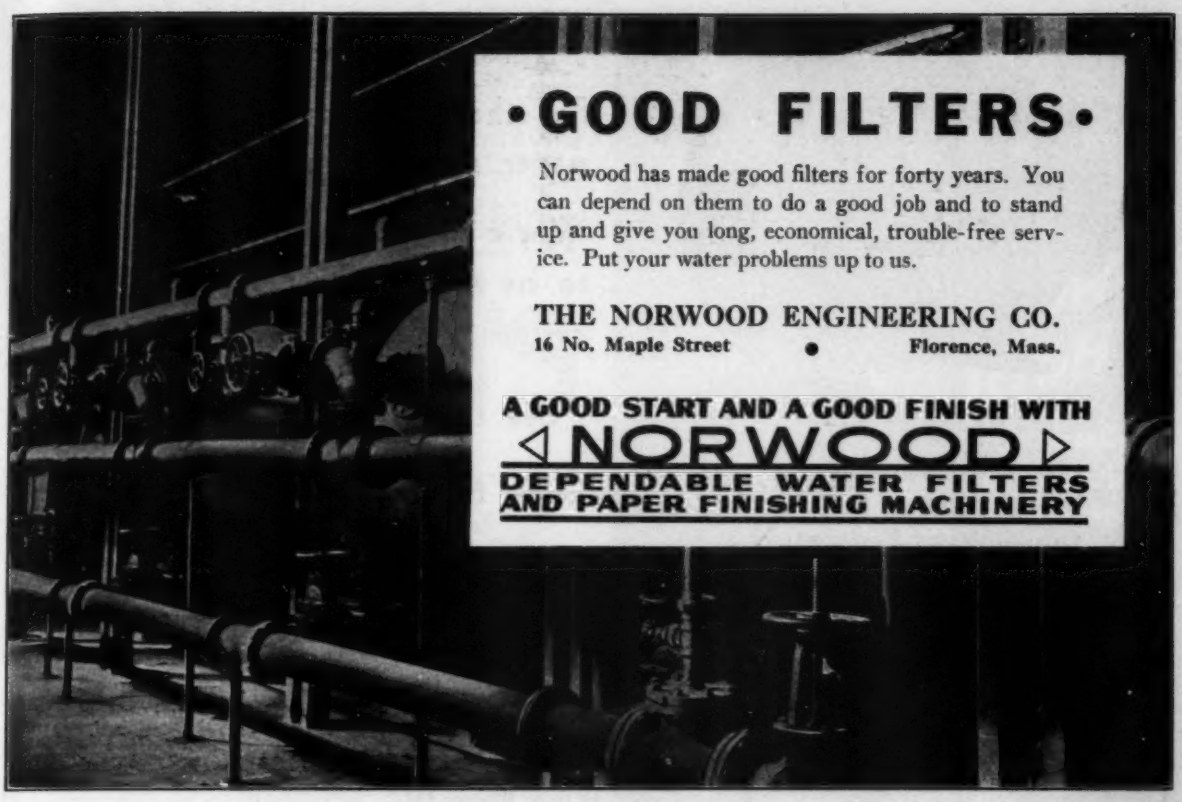

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PULP AND PAPER MILLS
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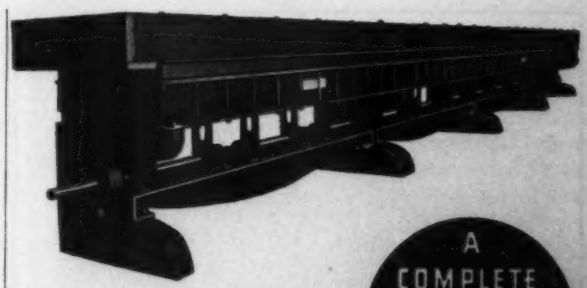

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This New Murray Flat Screen is equipped with a special drive developed to meet exacting and heavy duty requirements with high speed. A modern equipment for the mill that must improve quality and cut operation costs to meet all competition. Quiet in operation. Efficient, these screens will do a better job of cleaning your pulp. No vibration, no pounding, no clatter. Highest efficiency, with lowest maintenance and lowest power costs. This drive can also be installed on your present screens. Write for prices on screens you require to modernize your mill. Remember, we make all sizes and types of construction to fit every requirement.

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For the **UNUSUAL**
paper machine screen job.

Where the consistency is too great to be satisfactorily handled by the customary slotted plate screen

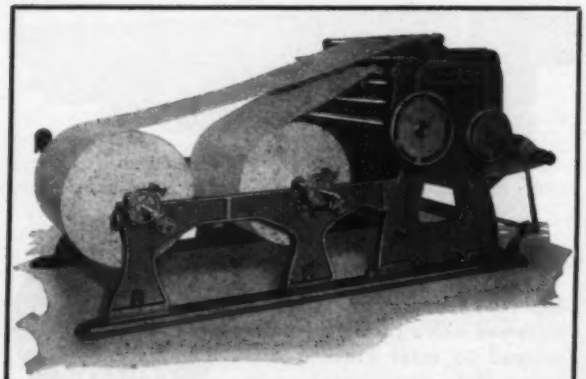
Use the **"TRIMBEY"**

Other Mills are doing it:—

Ask us.

Capacities up to 50 tons per day.

TRIMBEY MACHINE WORKS
Glens Falls, N. Y.
"Made in Canada" by Foster Wheeler, Ltd.



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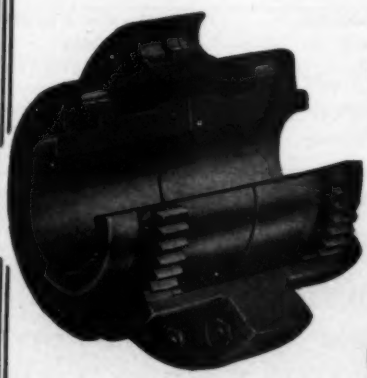
Greater production and a better product at a lower cost—therefore profit for the producer.

- This machine may be operated with an hourly production of from 10 to 45 cases per hour, depending upon the width of the unit.
- Embosser may be attached direct between jumbo rolls and interfolder. Product carried direct to banding table.
- Used by several manufacturers for interfolding waxed papers or any light weight tissues.

Hudson Sharp Machine Company
Green Bay, Wisconsin

POOLE

FLEXIBLE COUPLINGS



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Forged Steel
No Welded Parts

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Free End Float
Dust Proof
Fully Lubricated

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Many of the world's fastest newsprint machines are clothed with Orr Felts, which incidentally, are doing a magnificent job and stand up like the proverbial leathernecks.

Felts designed for such outstanding performances at high speeds typify the many other Orr weaves and naps required for the many Fourdrinier and cylinder machine grades now on the market.

Give Orr felts an opportunity to serve you. The line is complete . . . and there is a representative ready to serve you.

THE ORR FELT & BLANKET CO.
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● This illustration proves that the Wright Hoist is *right*—in every way—for routine production procedure.

This Wright Hi-Way Improved High Speed Hoist mounted on a Wright hand traveling crane is serving a battery of production machines under close headroom conditions. Material is handled easily, quickly and safely.

All of the 21 features of the Wright Improved High Speed Hoist do their part in assuring plant operators the maximum in service and safety over a long period of time.

Why don't you write for the new Wright catalog? It contains a world of statistical data that will prove of inestimable value to those who want to improve their material handling methods.

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AMERICAN CHAIN & CABLE COMPANY, INC.
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In Business for Your Safety

WRIGHT *Improved High Speed* **HOISTS**

PERSONALS

CHEMICAL SOCIETY HONORS DR. DORR

The Chemical Industry Medal of the Society of Chemical Industry was presented to Dr. J. V. N. Dorr, president of the Dorr Company, Inc., at a joint meeting of the American Section of the Society of Chemical Industry and the American Chemical Society on November 4, 1938. The medal is awarded annually for valuable application of chemical research to industry.

The medal was given this year to Dr. Dorr in recognition of his inventions and subsequent world-wide introduction of apparatus and processes in many chemical, metallurgical and sanitational operations which have made possible low-cost production on a large scale.

Dr. Dorr was born in Newark, N. J., in 1872. He received his B.S. degree from Rutgers University in 1894, the honorary degree of Master of Engineering in 1914, and the honorary degree of Doctor of Science in 1937 from the same institution. He spent several summers in the laboratories of Thomas A. Edison, the last as chemical experimenter with Mr. Edison, himself. He invented the Dorr Classifier, which has been called editorially, "the piece of equipment that comes nearest to being in universal use in modern hydrometallurgy."

In the years that followed came other inventions of far-reaching industrial importance—The Dorr thickener, the Dorr agitator, and continuous counter current decantation.

Dr. Dorr is a former president of the American Institute of Chemical Engineers, the United Engineering Trustees and the Zeta Psi Fraternity. He has for many years been a trustee of Rutgers University.

◆

G. R. BURKHARDT OPENS OWN AGENCY

President, general manager and a director of the White and Wyckoff Manufacturing Company of Holyoke, Mass., George R. Burkhardt has resigned from the company to organize a stationery sales agency with headquarters in New York City. His resignation becomes effective November 30. C. A. Warner, for many years manager of the White and Wyckoff New York office, will be associated with Mr. Burkhardt.

Mr. Burkhardt's resignation comes almost exactly on the 38th anniversary of his first going to work with the Holyoke firm as an office boy. He worked his way up through the ranks and in 1931 was chosen president to succeed the late J. Lewis Wyckoff. Mr. Burkhardt is president of the National Association of Greeting Card Manufacturers and is vice-president of the National Tablet and Stationery Manufacturers Association.

◆

GARDNER MADE TREASURER OF CHAIN BELT CO.

Newly elected to the post of acting treasurer of the Chain Belt Company, Milwaukee, Wis., is Fred V. Gardner who fills the vacancy caused by the death of C. L. Pfeiffer (cf. THE PAPER INDUSTRY AND PAPER WORLD, p. 796, Oct. 1938). John T. Brown, vice-president, was elected to the board of directors at the same meeting and G. M. Dyke, assistant treasurer, was re-elected. A. F. Kessler, chief accountant, was elected an assistant treasurer.

Mr. Gardner, who has been connected with the company since early in the year in a consulting capacity, was formerly associated with the General Electric Company at Schenectady as supervisor of budgets. He was awarded the Coffin Foundation Award, given yearly to the employee who performs the most outstanding service for the furtherance of the industry.

Fred V. Gardner

Mr. Brown has been associated with the Chain Belt Company since 1924, first as a student apprentice and then successively as production manager, works manager and since 1936, vice-president.

Mr. Dyke joined the Chain Belt Company in 1923 and shortly thereafter was made vice-president of the then newly-acquired Stearns Conveyor Company at Cleveland. When the Cleveland operations were merged with the Milwaukee operations in 1933, Mr. Dyke returned to Milwaukee to become assistant treasurer.

◆

▸▸▸ New general superintendent of the Hawthorne Paper Company, Kalamazoo, Michigan, is *Fred Hodgemire,* who was formerly night superintendent at the company. Mr. Hodgemire started work at the Hawthorne firm in 1913 as third hand. He became night superintendent in 1930 and remained at that post until his recent appointment as general superintendent.

◆

J. L. OBER LEAVES BRUNSWICK PLANT

A Southern newspaper has published an item stating that J. L. Ober, vice-president and general manager of the Brunswick Pulp and Paper Company, Brunswick, Georgia, will return to the Scott Paper Company, Chester, Pa., in an official capacity within a short time. Mr. Ober, the item states, will be succeeded by E. J. Gaynor, who has been assistant plant manager of the Scott Paper Company for several years.

◆

▸▸▸ Recently appointed superintendent of the Norton Company of Canada, Ltd., Hamilton, Ontario, is *Carl L. Leafe,* who has been connected with the Norton Company at Worcester, Mass., for the past thirty years. Mr. Leafe succeeds Albert Johnson who has been appointed consulting engineer for the Canadian plant.

◆

COLE SUCCEEDS HARVEY AS SUPT.

Chauncey E. Cole, well known for his experience in the board industry, is now general superintendent of the Chesapeake Paperboard Company, Baltimore, Md., succeeding the late Tom Harvey (cf. THE PAPER INDUSTRY AND PAPER WORLD, p. 580, Aug., 1938).

Prior to his association with the Baltimore firm, Mr. Cole was associated with the John H. Heald Company,

RECORD 2-WAY (2 PORTS) AND 3-WAY (3 PORTS)
"CLEAR-WAY" BALANCED GATE THICK STOCK VALVES
"IMPROVED TYPES"

FOR PAPER AND PULP MILL SERVICE

LEVER OR WORM GEAR OPERATED—SIZES 3" UP
METALS—ALL IRON, I.B.B.G., ALL BRONZE

12"—3 WAY—Fig. 401, Lever Operated

The "Improved Types" with balanced gates, while maintaining the same design of passageways through gate and valve as the older types, have taper gates to make operation more easy, take up wear and allow slight adjustment for hot stock. Face to face dimensions as older types. Self indicating and packings lubricated.

RECORD FOUNDRY & MACHINE COMPANY
LIVERMORE FALLS, MAINE, U. S. A.

CLEANING SAVE-ALLS THE OAKITE WAY

"best job we have ever seen"

STILL another engineer reports Oakite cleaning best for reconditioning dirty save-alls.

In this particular plant, there are four units . . . all of the largest size made. Cleaning such huge equipment is a big job . . . and a tough one, too, for the wires are often clogged with pitch as well as slime.

Yet an Oakite solution, applied with an Oakite steam gun not only cleans thoroughly, but does the job in 40% less time.

Wouldn't you like full information on this modern, quicker way to clean save-alls?

Manufactured only by
OAKITE PRODUCTS, INC., 16 Thames St., NEW YORK
Branch Offices and Representatives in All Principal Cities of the U. S.

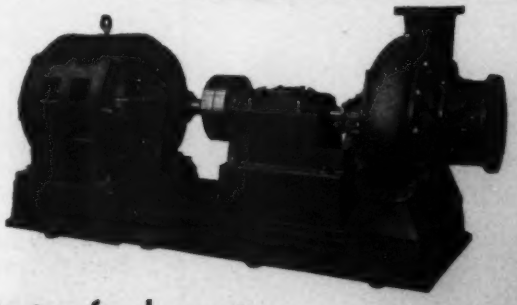
OAKITE *certified* **CLEANING**

The MORRIS HYDRAULIC COLUMN

News of interest to Centrifugal Pump Users

+ & X . . . .

The mathematics of Morris installations usually involves addition and frequently multiplication. Which, speaking more plainly, simply means that after trying one Morris Centrifugal Pump, plant engineers come back to Morris when they need more. Example: A paper company installed a Morris Pump some years ago. They now have several hundred. The reasons? You will find them in a Morris bulletin specially prepared for paper and pulp mill superintendents and engineers. Your copy promptly sent on request.



Recipe for longevity —applied to pumps . . . . .

There's an old—and well founded—medical saying that if you want to live long, pick out long-lived grandparents. On that basis alone, the Morris Pumps of today are assured of a long, useful life, for they have the same rugged constitution that has characterized their pump predecessors for more than two human generations. The Morris Paper Mill bulletin tells the whole story—write for copy.

MEMBER

For authoritative recommendations on any pumping problem, write to Morris Machine Works, Baldwinsville, N. Y. Representatives in principal cities.

Lynchburg, Va.; the board mills of the Fraser Company at Madawaska, Maine; and the Haverhill Boxboards of the Robert Gair Company. Mr. Cole also worked for the late Mr. Harvey several years at Middletown, Ohio.

◆

C. V. CAESAR RESIGNS POST

C. V. Caesar, managing director of the E. B. Eddy Paper Company, Hull, Quebec, resigned this position on September 2 because of ill health. He has also resigned as president of the Canadian Forestry Association. Mr. Caesar has been succeeded as managing director by W. Sidney Kidd, formerly assistant general manager, which position has been filled by the promotion of Ralph Johnstone, general superintendent.

◆

BREWSTER MADE FIELD DIRECTOR AT SAVANNAH

Donald R. Brewster, forestry specialist of the South Carolina Extension Department of Clemson College, was elected field director of the Herty Foundation Laboratory, Savannah, Georgia, October 23. Mr. Brewster succeeds Frank DeC. Heyward, Jr., state director of forestry for Georgia,

Donald R. Brewster

who was loaned to the foundation by Governor E. D. Rivers until a full-time director was elected.

Mr. Brewster is thoroughly experienced in his new duties, having been connected with the Forestry Department of South Carolina for some time. He is a native of Minnesota and graduated from the University of Minnesota in 1910. He was connected with the United States forestry service for ten years, both as forest assistant and forest examiner, and has served as consultant and advisor in forestry for commercial companies, and served as timber utilization engineer for the National Lumber Manufacturers Association. Before going to Clemson College, Mr. Brewster was located in Georgia, and has seen service over the Northwest and in the South.

Mr. Brewster will devote his full time to the work of the laboratory, resigning his position with the South Carolina extension service.

◆

▶▶▶ Newly elected as representative of the Pacific Coast paper industry in the National Association of Accredited Publicity Directors, Inc., is *Henry W. von Morpurgo,* manager of the Publicity and Public Relations Department, The Pabco-Paraffine Companies, Inc.

◆

▶▶▶ Formerly connected with the George H. Ellis Company, the American Writing Paper Company and the George W. Wheelwright Paper Company, *Robert N. Finlay* has established his own concern as a paper mill agent in New York City.

◆

▶▶▶ *A. C. Fuller,* well known papermaker and superintendent of the Gilman Paper Company, Gilman, Vt., has resigned his position and is temporarily connected with the Groveton Paper Company in an advisory capacity.

◆

▶▶▶ Succeeding the late Charles W. Unkle as superintendent of the Fairfield Paper Company, Baltimore, Ohio, is *Homer Eveland,* whose appointment was announced recently. Mr. Eveland has been associated with the Fairfield Paper Company for quite some years.

◆

▶▶▶ Newly appointed mill manager of the Lake St. John Power & Paper Company at Dolbeau, Quebec, is *S. E. Williams* who succeeds *A. G. Jacques.* Mr. Jacques has been appointed mill manager of the St. Lawrence Paper Mills, Ltd., at Three Rivers, Quebec.

◆

▶▶▶ *A. M. MacCutcheon,* engineering vice-president of the Reliance Electric & Engineering Company, Cleveland, Ohio, sailed from New York on October 15 for a nine-week business trip abroad. Mr. MacCutcheon will visit the leading European manufacturers of electric power equipment to study recent developments in design and manufacturing.

EARL MacMILLAN IS MADE SALES MGR.

New general sales manager of the Holyoke Card and Paper Company, Springfield, Mass., is Earl MacMillan of South Hadley Falls, Mass., who will be in charge of sales in the United States and Canada. Mr. MacMillan has

Earl MacMillan

purchased an interest in the concern which has been established for 50 years and has a valuation of from $300,000 to $500,000.

The company produces many lines which Mr. MacMillan formerly dealt with when connected with the Hamoden Glazed Paper Company of Holyoke, Mass. Mr. MacMillan was associated with the latter concern for many years prior to his resignation early in September.

◆

▶▶▶ Formerly superintendent of the Rising Paper Company, Housatonic, Mass., *Richard Dempsey* has recently been made vice-president in charge of production at the Massachusetts firm. *Harry Norton,* formerly assistant superintendent, succeeds Mr. Dempsey as superintendent.

◆

▶▶▶ Now on the laboratory staff of the Stearns Magnetic Mfg. Company, Milwaukee, Wis., is *Harvey Nicholson,* a graduate of the Missouri School of Mines and Metallurgy. The Stearns company makes an extensive line of magnetic separation equipment and magnetic friction devices.

◆

▶▶▶ Formerly head of the wallpaper division of the Kimberly-Clark Corporation, *Arthur Redlin* has resigned his position to become general superintendent of the Beach and Arthur Paper Company, Paperville, Pa.

TANKS TO MEET YOUR SPECIAL REQUIREMENTS

★ ANY SHAPE, ANY SIZE

Propeller Agitator Tank—drawing of Glazed Tile Tank with midfeather arranged for propeller agitation.

Kalamazoo Glazed Tile Tanks are ideal for all types of paper stock chests.

They are stronger, cleaner, more durable, and more economical than any tank made. Built for your individual requirements.

Manufacturers of wood tanks for 60 years.

GLAZED TILE

KALAMAZOO TANK & SILO CO.

KALAMAZOO, MICHIGAN

WOOD

Super wants this . . .

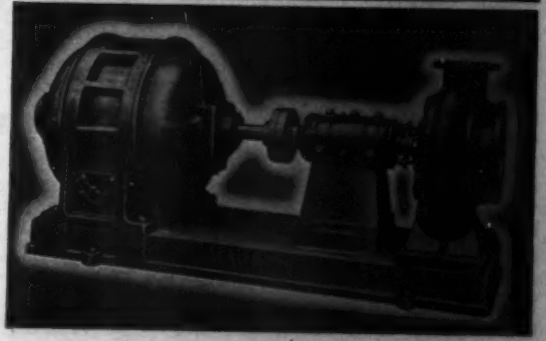
A paper mill pump must be rugged enough to go in on the job it's designed for—and stay with it, round the clock, month after month. Yet it must dependably keep power consumption low.

Maintenance Man wants this . . .

Give me a pump you can keep in good condition with routine repairs . . . a pump that won't take time out in the middle of a job, and put you in a tight spot with a broken shaft or a jammed impeller.

WARREN PUMPS

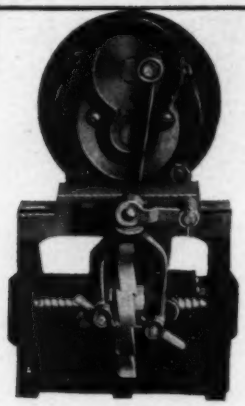
provide both



WARREN PUMPS PROVIDE BOTH

Warren pumps have extra-heavy shafts, oversize bearings, large stuffing boxes—all details, in fact, are calculated to keep Warren pumps on the job—and pumping costs down to rock bottom year after year. And when it comes to stock handling, consider carefully Warren's self-cleaning, non-binding impeller, that keeps your heavy stock on the move, stops shutdowns, saves money. Bring your pumping problems to Warren.

WARREN STEAM PUMP CO., INC., WARREN, MASS.



SAVE YOUR CLOTHING

ADOPT THE NEW PATENTED SWIVEL TYPE OF PENDULUM PALM GUIDE WHICH EXERTS FEATHER PRESSURE TO GUIDE YOUR WIRES, WET FELTS AND DRYER FELTS.

GILBERT & NASH CO.

BOX 86—MENASHA, WIS.

NECROLOGY

▸▸▸ Dean of Canadian papermakers, *William James Finlay,* president of the Strathcona Paper Company, passed away at his home in Strathcona, Ontario, October 23 at the age of 78. He had been active in the paper industry for 67 years. Surviving Mr. Finlay are two sons and two daughters.

◆

CHARLES T. RUE

Charles Teale Rue, secretary of Perkins Goodwin, New York City paper firm dealing in newsprint and magazine paper, passed away October 6 at his home in Orange, N. J. He was 47 years old.

Mr. Rue moved to Orange from Garden City, Long Island, twenty years ago, following his marriage to the former Miss Genevieve Sharp of Orange. He was a member of Baltusrol Golf Club, Orange Lawn Tennis Club and Crescent A. C. of Brooklyn. Besides his widow Mr. Rue leaves a son and a daughter.

◆

▸▸▸ For many years associated with Tileston & Hollingsworth Company, *Percy D. Wells,* Boston paper merchant, passed away September 26 in Belmont, Mass. Mr. Wells had established his own distribution business after leaving Tileston & Hollingsworth. His widow and a daughter survive him.

◆

FRANK P. MEYER

Associated with the Pittsburgh Piping & Equipment Company, Pittsburgh, Pa., since its inception in 1903, Frank P. Meyer, a director of the Pittsburgh firm, passed away October 19 after a short illness.

Mr. Meyer entered the employ of the Pittsburgh Piping & Equipment Company at the age of 20 as an estimator. He quickly advanced to the position of chief engineer and was elected to the board of directors in 1928. The first of this year he advanced to the position of manager of the Engineering Department.

Frank P. Meyer

10" Misco "C" "Centricast" pipe with Van Stone type ends

MISCO "C"
"Centricast"*
CENTRIFUGALLY CAST
Stainless Steel
PIPE
2" to 20"
Flanged • Threaded • Plain

*Trade Name Registered

More than 30 producers of sulphite pulp use Misco "Centricast" acid and relief pipe

Misco "Centricast" tubes are also recommended for

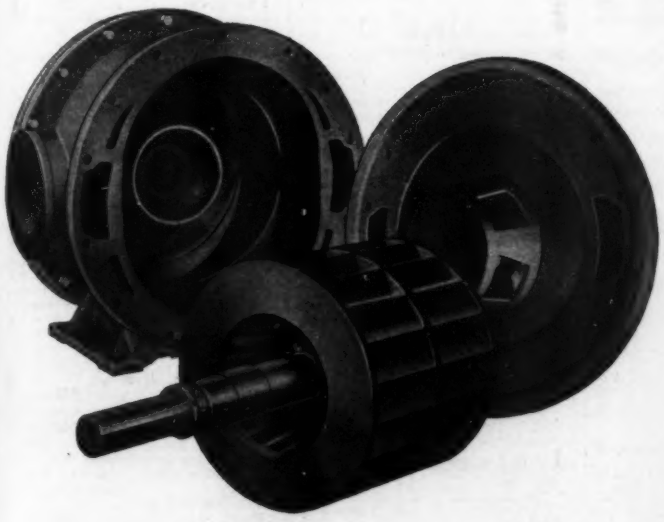
Rollers for all types of conveyors, Tube rolls for paper machines, Press rolls and many other applications requiring cylindrical castings to resist heat or corrosion.

MEMBER ALLOY CASTING RESEARCH INSTITUTE

MISCO
Heat and Corrosion Resistant Alloys

MICHIGAN STEEL CASTING COMPANY
One of the World's Pioneer Producers of Chromium-Nickel Alloys
1992 GUOIN STREET, DETROIT, MICHIGAN

SIMPLICITY! NASH VACUUM PUMPS HAVE ONE MOVING PART



Operating advantages made possible by the Nash principle, and present in no other type of vacuum pump, permit a new level of operating economy. Nash Vacuum Pumps have but one moving part, a rotor cast in one piece, and revolving without metallic contact. There are no valves, no pistons or sliding vanes, no internal parts requiring wear adjustment or lubrication.

Vacuum produced by a Nash Pump is non-pulsating without equalizing tanks. Liquid entering the pump does no harm, even in slugs. Reliability and durability are inherent in the simple Nash construction, and these qualities are assured by superior material and workmanship.

THE NASH ENGINEERING COMPANY
SOUTH NORWALK, CONNECTICUT, U. S. A.

CURRENT MARKET QUOTATIONS

RAGS (Domestic)
f. o. b. New York City

NEW RAGS — per cwt.

Blue Overalls	4.75 to 5.00
Corduroy	2.25 to 2.50
Cottons—	
Washables, No. 1	1.65 to 1.80
Fancy Percales	3.00 to 3.25
New Soft Blacks	3.50 to 3.75
New Light Seconds	1.60 to 1.75
New Dark Seconds	1.50 to 1.60
Khaki Cuttings—	
Mixed	3.25 to 3.50
O. D.	3.75 to 4.00
New Canvas	7.00 to 7.50
New Mixed Blacks	2.50 to 2.75
Shirt Cuttings—	
New White No. 1	6.75 to 7.00
Silesias No. 1	4.50 to 4.75
New Unbleached	6.75 to 7.00
Fancy	2.25 to 2.50

RAGS (Domestic)
f. o. b. New York City

OLD RAGS

Roofing— per cwt.	
No. 1	1.10 to 1.15
No. 2	.90 to .95
No. 3	.50 to .55
Twos and Blues—	
Repacked	1.50 to 1.60
Thirds and Blues—	
Repacked	1.25 to 1.35
Miscellaneous	1.00 to 1.10
White, No. 1—	
Repacked	3.25 to 3.50
Miscellaneous	2.50 to 2.75
White, No. 2—	
Repacked	2.00 to 2.25
Miscellaneous	1.50 to 1.75

RAGS (Foreign)
ex dock New York City

NEW RAGS — per cwt.

New Dark Cuttings	2.25 to 2.50
New Mixed Cuttings	2.25 to 2.50
New Light Silesias	4.25 to 4.50
Light Flannelettes	4.50 to 4.75
Unbleached Cuttings	6.75 to 7.00
New White Cuttings	7.00 to 7.25
New Light Oxfords	4.00 to 4.25
New Light Prints	3.25 to 3.50

RAGS (Foreign)
ex dock New York City

OLD RAGS — per cwt.

No. 1 White Linens	7.00 to 7.25
No. 2 White Linens	6.00 to 6.25
No. 3 White Linens	4.75 to 5.00
No. 4 White Linens	3.50 to 3.75
No. 1 White Cottons	4.00 to 4.25
No. 2 White Cottons	3.25 to 3.50
No. 3 White Cottons	2.50 to 2.75
No. 4 White Cottons	2.00 to 2.25
Extra Light Prints	2.50 to 2.75
Ord. Light Prints	2.00 to 2.25
Med. Light Prints	1.90 to 2.10
Dutch Blue Cottons	2.00 to 2.25
French Blue Cottons	2.25 to 2.50
French Blue Linens	2.75 to 3.00
Checks and Blues	1.75 to 2.00
Linsey Garments	1.50 to 1.60
Dark Cottons	1.15 to 1.25
Old Shopperies	1.00 to 1.10

ROPE and BAGGING
f. o. b. and ex dock New York City

Gunny No. 1— per cwt.	
Foreign	2.25 to 2.35
Domestic	2.10 to 2.20
Wool Tares— per cwt.	
Light	1.80 to 1.90
Heavy	2.00 to 2.10
Bright Bagging	1.65 to 1.75
Manila Rope—	
Foreign	3.00 to 3.15
Domestic	3.00 to 3.25
New Burlap Cuttings	2.25 to 2.40
Jute Threads—	
Foreign	2.75 to 3.00
Domestic	3.00 to 3.25
Strings—	
Sisal	1.50 to 1.80
Soft jute	1.75 to 1.85
Mixed	.50 to .60

WASTE PAPER
f. o. b. New York City

Shavings— per cwt.	
White Envp. Cuttings	2.40 to 2.50
Ord. Hard White No. 1	1.75 to 2.00
Ord. Soft White No. 1	1.60 to 1.75
Flat Stock—	
Stitchless	.75 to .80
Overissue Mags	.65 to .70
Solid Flat Book	.55 to .60
Crumpled No. 1	.45 to .50
Solid Ledger Books	1.40 to 1.50
Ledger Stock—	
White	1.15 to 1.25
Colored	.70 to .80
New B. B. Chips	.20 to .22½
Manilas—	
New Env. Cuts	1.50 to 1.60
New Cuttings	1.30 to 1.40
Bogus Wrappers	.20 to .22½
No. 1 Old Kraft	.65 to .75
News—	
No. 1 Wh. News Cuttings	1.30 to 1.40
Strictly Overissue	.40 to .45
Strictly Folded	.30 to .35
No. 1 Mixed Paper	.12¾ to .17½

CHEMICALS
f. o. b. shipping point

Alum (Papermakers)—	
Lump, cwt	3.40 -
Ground, cwt	3.15 -
Powdered, cwt	3.55 -
Blanc Fixe—	
Bulk, ton	42.50 to 45.00
Barrels, pound	.0350 to .0375
Bleaching Powder—	
Drums, cwt	2.00 to 2.25
Casein (Domestic Standard)—	
Ground (bags), lb	8.50 to 9.00
Fine grd. (bags), lb	9.00 to 9.50
China Clay—	
Domestic Filler	
Bulk (mine) ton	6.50 to 12.00
Domestic Coating	
Bulk (mine) ton	11.00 to 20.00
Imported (ship side)	
Bulk (lump) ton	14.50 to 24.00
Chlorine—	
Tank cars (wks) cwt	2.15 to 2.55
Gelatine (silicin) lb	.42 to .44
Glye. (C.P.) drums, lb	.1425 to .1475
Litharge, bbl., lb	.07 to .0725
Rosin (Gum)—	
New York, 280 lb. barrel	
E, per bbl	5.85
F, per bbl	6.80
G, per bbl	6.75
WW, per bbl	7.85
Rosin (Wood), per bbl., carlots	5.90
Salt Cake—	
Dom. bulk (wks) ton	12.00 to 13.50
Imp. bulk on dock—	
(Atl. ports) ton	14.50 to 15.00
Soda Ash—	
Bulk (works) cwt	.90 to .95
Paper Bags, cwt	1.05 to 1.30
Barrels, cwt	1.05 to 1.30
Soda (Caustic)—	
Solid, drums, cwt	2.10 to 2.30
Ground and flake, drums, cwt	2.50 to 2.70
Sodium Silicate—	
60 deg., 55 gal. drums, (works) cwt	1.85 to 2.00
40 deg., 35 gal. drums, (works) cwt	.80 to 1.20
Starch—	
Pearl, 140 lb. bags, cwt	2.40 -
Pearl, barrels, cwt	2.65 -
Paper (Sp.) bags, cwt	2.50 -
barrels, cwt	2.75 -
Sulphur (crude)—	
(mine) bulk, ton	16.00 to 19.00
Talc—	
Dom. 100 lb. bags (mine) ton	14.00 to 18.00
Imp. bulk, ton	25.00 to 40.00
Titanium Dioxide—	
Ba. Pig., bbls., lb	.05¾ to .06¼
Ca. Pig., bbls., lb	.05¾ to .06¼
Zinc Sulphide, bbls., lb	.09 to .095

CHEMICAL PULP
(Air-dry ton)

Soda (Dom.) del'd. mill— per cwt.	
Bleached	2.55 -
Sulphate (Dom.) f. o. b. mill—	
Bleached	2.50 to 2.75
Kraft No. 1	2.00 to 2.25
Kraft, Southern, del	1.75 to 2.00
Sulphate (Imp.) on dock—	
Bleached	2.50 to 2.75
Kraft No. 1	1.65 to 1.85
Kraft No. 2	1.55 to 1.65
Sulphite (Dom. & For.) On dock—	
Prime bleached	2.50 to 2.75
Prime easy bleach	2.15 to 2.40
Prime strong unbl	1.90 to 2.15

MECHANICAL PULP
(Air-dry ton)

No. 1 Dom. & Can. per ton	
(f. o. b. mill)	19.00 to 22.00
No. 1 Imp. (On dock)—	
Moist	23.00 to 26.00
Dry	34.00 to 35.00

PAPER
f. o. b. New York City

Boards— per ton	
Binders	71.00 to 77.00
Chip	27.50 to 30.00
Chip, sgl. mls. lined	42.50 to 45.00
Coated, white patent	
.016	60.00 to 65.00
.020 and heavier	55.00 to 60.00
Kraft liner	42.50 to 45.00
News	27.50 to 30.00
Book (coated)— per cwt.	
No. 1 Glossy Coat	10.50 to 12.50
No. 2 Glossy Coat	9.25 to 10.75
No. 3 Glossy Coat	8.15 to 9.50
No. 4 Glossy Coat	7.65 to 9.00
No. 1 Antique	7.65 to 9.00
No. 2 Offset	7.25 to 8.25
A Grade E. F	6.80 to 8.00
A Grade Super	7.05 to 8.25
B Grade E. F	6.25 to 7.50
B Grade Super	6.50 to 7.75
C Grade E. F	6.00 to 7.00
C Grade Super	6.25 to 7.25
D Grade E. F	5.70 to 6.75
D Grade Super	5.95 to 7.00
Ivory & India	.50 cwt. extra
Bonds (Rag Content)—	
100% Rag per cwt.	
Ext. No. 1	39.10 to 46.00
100% Rag	31.05 to 36.80
85% Rag	
75% Rag	23.60 to 27.75
65% Rag	20.50 to 25.00
50% Rag	17.35 to 21.50
25% Rag	14.65 to 17.75
Regular Colors	1.00 cwt. extra
Heavy Colors	3.00 cwt. extra
Bonds (Sulphite)— per cwt.	
No. 1	8.80 to 10.75
No. 2	7.90 to 9.50
No. 4	7.00 to 8.50
Colors	1.00 cwt. extra
Glassine (f. o. b. mill)— per cwt.	
Embossed (25 lb. up)	12.25 -
Bleached (25 lb. up)	11.25 -
Unbleach (25 lb. up)	9.50 -
Greaseproof—	
Bleach. (25 lb. up)	9.20 -
Unbleach. (25 lb. up)	8.75 -
Ledgers (Rag Content)—	
100% Rag per cwt.	
Ext. No. 1	40.25 to 47.25
100% Rag	32.20 to 37.75
85% Rag	29.90 to 35.00
75% Rag	24.75 to 29.00
65% Rag	21.65 to 26.25
50% Rag	18.70 to 22.75
25% Rag	15.80 to 19.25
Regular Colors	1.00 cwt. extra
Heavy Colors	3.00 cwt. extra
Ledgers (Sulphite)— per cwt.	
No. 1	9.95 to 12.00
No. 2	9.05 to 11.00
No. 4	8.20 to 10.00
News— per ton	
Rolls (Contract)	50.00 -
Rolls (Spot)	(nominal)
Sheets	58.00 -
Tissues (Carlots)— per ream	
Anti-Tarnish M. G	.75 -
Colored	.875 -
Kraft	.75 -
Manila	.60 -
Napkins, semi-crepe (12¾ lb. to M shts.) per cs	.48 -
Napkins, full crepe and emb'sed (12¾ lb. to M shts.) per cs	.52 -
Toilet, Bleached (M shts.) per cs	5.80 -
Toilet, Unbleached (M shts.) per cs	3.25 -
Towels— per case	
Bleached	3.10 to 3.65
Unbleached	1.95 to 3.30
Wrappings (Kraft)— per cwt.	
Extra Quality	4.75 to 5.25
Super-Standard	4.12½ to 4.63½
Northern Standard	4.00 -
Southern Standard	3.50 -
Wrappings (Sulphite and Bleached Kraft)— (Rolls, f. o. b. mill)	
Bleached papers—	
M.F. & M.G. Waxing, 30 lb. (Carloads only) per cwt.	5.75 -
(10,000 lbs.)	6.00 -
Drug wrapp. 35 lb	6.00 -
Unbleached Papers—	
Com. Grd. Butch. 40 lb	4.25 -
No. 1 Butchers	4.50 -
No. 1 Instt. Parch & Dry Fin. Groc. Sulphite 30 lb.	4.875 -
No. 2 Instt. Parch & Dry Fin. Groc. Sulphite 30 lb.	4.625 -
Steam Finish, 50 lb	3.625 -
Water Finish, 40 lb	4.25 -
Manilas—	
Envp. Mls., Sub. 16-40 (No. 1)	4.75 -
Envp. Mls., Sub. 16-28 (No. 2)	4.50 -
Envp. Mls. (Prices based on large sheets untrim'd reammarked, in bdls.)	
Wrapp. Mls. 35 lb. up—	
No. 1	5.00 -
No. 2	4.75 -
M. G. Sulphite (other than Waxing)	
Grade A-25 lb	5.00 -
Grade B-25 lb	4.75 -

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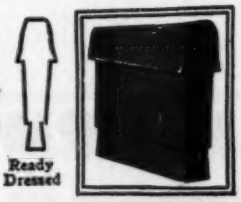

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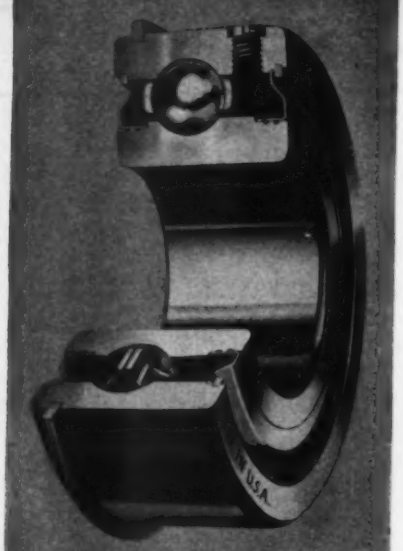

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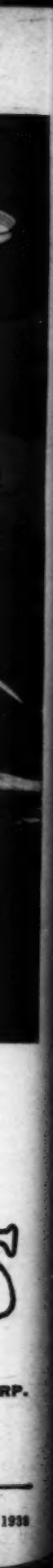
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